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Productivity Measurement for Home Health Care Registered Nurses

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PRODUCTIVITY MEASUREMENT FOR
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HOME HEALTH CARE REGISTERED NURSES

by

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ABSTRACT

PRODUCTIVITY MEASUREMENT FOR
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The purpose of this study is to develop a productivity measurement applicable to home health registered nurses (RNs) by identifying and quantifying the knowledge and ability variables that define productive nurse practice.

A preliminary set of knowledge and ability variables was identified based on content analysis of interviews with local nurse managers and round I of a three round Delphi procedure, using a purposive sample of nurse managers from nationally preeminent agencies. A randomized national sample of 337 nurse managers was then surveyed to determine the relative value and rank of the knowledge and ability variables. These variables were refined during Delphi round II and III.

Based on the three Delphi rounds, the interviews and the responses to the national survey, a profile was developed, using factor analysis, consisting of 35 important knowledge and ability variables. These variables clustered into seven constructs: Practice Management, Knowledge/skill Maintenance, Written Documentation, Home Health Care Knowledge, Communication, Nursing

Process, and Client/Family Management. Within these seven constructs, the following individual variables were considered most important: skill in health assessment and hands on technical skill, documentation, independent decision making, communication, organizational ability, and a foundation in teaching/learning principles and home care rules and regulations. Qualitatively identified associations among variables were statistically supported.

Nonparametric tests, including the Kruskal-Wallis and Mann-Whitney U test, were used to identify differences in the importance of specific knowledge and ability variables among governmental, hospital based, proprietary, and VNA agencies, and between hospice and non-hospice agencies. No significant differences were found among agency types. However, among agencies considered "preeminent," intellectual skills appeared to be of greater importance to productive practice than direct care skills.

Results of this study suggest a profile of productivity dimensions which provides (1) a theoretical basis for understanding the knowledge and ability variables associated with RN productivity in the home health setting, (2) a description of nurse inputs in a home health services productivity model, and (3) a reality based measurement tool that has utility in understanding and managing RN productivity in home health care.

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CHAPTER I

THE RESEARCH PROBLEM

Statement of the Problem

Home health care nurses have not adequately defined the skills or elements of their practice and practice setting that relate to productive work. The problem is: what are the variables that define productivity in home health nurses? To be able to quantify nurse productivity, this concept of productivity must be subdivided and components identified.

In this era of cost containment and changing methods of financing health care services, home health care nurse managers face the challenge of using limited resources in the most cost-efficient manner to provide quality services to clients. Thus, improving nursing productivity is seen as a major strategy for increasing efficiency in service delivery. Currently there are no reliable and valid industry-wide nursing productivity measures available for managers to explore productivity in adequate detail to provide data for "planning, monitoring, and implementing change" (Storfjell 1987).

Therefore, the purpose of this study is to develop a productivity measurement applicable to home health care registered nurses (RNs) by

identifying and quantifying the elements or components predictive of RN productivity.

Background and Significance

Productivity evaluation has been a little used management strategy in home health care, in large part because data on productivity definition and measurement are limited. If the dimensions that characterize the productive RN can be operationalized, then managers could develop strategies that maintain and develop an RN staff who provide both efficient and effective nursing care. The results of this study may lead to improved quality of care and more cost-effective methods for structuring the nursing home visit. In addition, because of the focus on assisting nurses to practice the skills of their discipline, the proper measurement of productive behavior may facilitate an environment where staff turnover is reduced and motivation is high.

Productivity is usually defined as output per given input and is described in terms of efficiency and effectiveness of the work activity and equity in service delivery (Linn and Karsten 1982). This approach focuses on the number of units of service produced. In rare instances the impact of the work on the client, or the long term consequences, is evaluated; a focus on impacts is often omitted in an analysis of productivity because of the difficulties inherent in measurement. In health care services, even measuring the outcome, or short term consequences of the activity, is difficult because many other variables affect the end result of

the nurse activity (Curtin and Zurlage 1986, Haas 1984, Linn and Karsten 1982). In home health care, productivity is usually measured in terms of output: the number of home visits completed within a certain time frame (Benefield 1988, Levy 1979, Power 1987, Rozelle 1977). This measurement does not reflect the acuity level of the client, the complexity of nursing care given or the consequences of the nursing service for the client.

At present, there is no method to measure home health care nurse productivity other than the number of visits completed within a certain unit of time. This output measure primarily focuses only on the time it takes to complete a task. Since nursing involves psychomotor, cognitive and affective domains, this is not an adequate measure of efficient and effective nurse resource use. Information is needed on which particular knowledge, skills, and abilities are necessary for productive nurse behavior in home health care nursing. Determining the dimensions of productivity for RNs in clinical practice will provide managers with the baseline data necessary for effective management of nurses in this setting.

Research Questions

This study was designed to develop a profile for defining productivity of RN staff that would be suitable for productivity management services. The following research questions were addressed:

1. What variables are identified by home health care nurse managers that are reflective of the productive nurse?
2. What typical productivity profiles are identified by nurse managers in the four major types of agencies (governmental, hospital based, proprietary, and visiting nurse association)?
3. Is there a difference in nurse productivity profiles identified by nurse managers in the four major types of agencies?
4. What classification of productivity variables from the data has both predictive validity and can be of use to managers in delivering home health services?

Definitions

Abilities: action oriented implementation of knowledge and intellectual skills, including application of psychomotor skills.

Effectiveness: the degree to which an RN has accomplished the intended agency goals related to managing and providing care to a client in their residence.

Efficiency: production of a home visit and associated activities related to the home visit without material or time waste.

Governmental Home Health Agency: a home health agency primarily administered by a state, county, city or other local unit of government and having as a major responsibility the prevention of disease and community education

(DHHS, HCFA, Medicare Form 1515, 1980). Also known as an "official" agency.

Home Health Agency: a Medicare certified home health care program, department, or organization which provides intermittent nursing services as defined by Medicare (Storfjell 1988).

Home Health Care Nurse Manager: a RN who is employed full time by a home health agency and whose main function is supervision of RN staff who provide home visits.

Home Health Care Nurse: a registered nurse (RN) employed by or contracted for by a home health agency to provide skilled intermittent nursing services to clients in their homes (adapted from Storfjell 1988).

Hospital Based Home Health Agency: a home health agency physically located in a hospital, and which is administratively and fiscally dependent upon the facility for its viability (DHHS, HCFA, Medicare Form 1515, 1980).

Impacts: the long term health maintenance or change in a client.

Inputs: client, family, health provider, and environmental attributes that interrelate to produce outputs and outcomes.

Knowledge: recall or recognition of facts and the development of intellectual methods for dealing with a new problem situation (also known as the "cognitive domain" of learning).

Outcome: the short-term maintenance or change in specific health indices of a client

Output: the completion of a home visit in a manner that is acceptable to the nurse, client, agency and funding source

Productivity: the relationship between the amount and quality of output produced and the input required to produce it, encompassing both the effectiveness and efficiency of the service (Jelinek and Dennis 1975, National Council on Health Planning and Development 1980).

Proprietary Home Health Agency: a home health agency owned and operated by an individual or a business corporation. The organization may be a sole proprietorship, partnership (including a limited partnership and joint stock company or corporation (DHHS, HCFA, Medicare Form 1515, 1980).

Visiting Nurse Association: a home health agency that is governed by a community-based board of directors and usually is financed by earnings and contributions; may also be identified as "voluntary non-profit" (DHHS, HCFA, Medicare Form 1515, 1980), also known as "VNA" or "VNS" (Visiting Nurse Service).

Overview of Chapters

Chapter two reviews the literature related to productivity measurement and nursing effectiveness and efficiency, nurse attributes as input in a productivity model, knowledge and abilities of community health and home health care

nurses, and the major types of home health agencies. Chapter three details the methodology for the study and chapter four presents the study results and analysis. Chapter five offers conclusions and recommendations for further research.

CHAPTER II

REVIEW OF THE LITERATURE

This section reviews the economic and management science approach to productivity, the complexity and interaction among concepts that form a productivity model in nursing and health sciences, the constructs that define nurse inputs in the productivity process, and the types of home health agencies.

Models of Productivity

There are considered to be two models of productivity: an economic model and a management science model (Edwardson 1985). The economic approach analyzes outputs over inputs per unit of time and is considered the "industrial" model. This concept of productivity works best in the industrial sector of the economy where input and outputs are clearly defined; inputs usually include and can be measured in units of materials and labor, outputs represent the end product of production and can be directly quantified (Edwardson 1989).

In the service sector of the economy (including most human services, particularly health services), the industrial model has demonstrated limited applicability, primarily because services, not products, are produced (Edwardson 1985). "Using industrial techniques for working with white collar employees has

not been successful, because such work place analysis tools are not necessarily structured for activities performed by knowledge workers" (Higgins and Dice 1984, 302). In health services the end result of production is most appropriately a change in health status of the client (the outcome), and outputs include the services provided as a means to achieving the outcomes. Since services are being produced, delivered, and consumed all at the same time, it is difficult to determine a clear definition of output (Edwardson 1989) and outcomes. Most of the previous work in the field focused on the processes that health professionals use in achieving a change in health status (Jelinek and Dennis 1975), simply because the product of the service was so difficult to determine and measure.

Therefore, the management science approach has been more commonly identified with health services. This approach describes the work activity and examines the relationship between services and resources used in doing the work (Edwardson 1985). Work activities are defined as the precise tasks and activities used in a specific client situation or encounter, and/or the more indepth quantification of the tasks and activities used in the process of completing the work or procedure. The specific work activities are identified first, then the relationship between work activities and resources (human and other) that contribute to the activities are analyzed, to determine the "best fit" between the two. One specific work activity may be evaluated (example: home health care discharge visit, hospital pre-operative teaching session) for strategies on how to

improve the process. The management science approach is more applicable to human services productivity and health care management.

Even with this model, however, productivity in the health services is at best difficult to manage. Linn and Karsten (1982) identify issues of (1) decentralized control of operations related to productivity and (2) uncertain product definition as major problems with productivity management. "Health sciences are not yet precise enough to allow us to definitely posit the cause and effect input-output relationship necessary for such assumptions" about outputs (Linn and Karsten 1982, 178).

Of the two models of productivity, the industrial model is seen as the more classical measurement. While functioning well within the agricultural and manufacturing industries, this model appears to have limited usefulness when applied to the service industries (Packer 1983). When using the industrial model, there is difficulty in transferring the "number of units produced" to professional groups where the output is more intangible. In home health care, the number of visits completed can be and is measured, however this measure does not reflect the quality of service delivered.

In addition, classical techniques are not applicable to services where custom results (unique services) are provided. In home health care, the number of visits per time unit can be determined for each nurse, but this is not comparable among client populations with differences in complexity of illness, coping, social

support, etc. The classical model also fails to consider the consumer's perception of the service which, in home health services, impacts on the effectiveness of the treatments and subsequent outcomes (changes in client health status). The industrial model fails to focus on outcomes, which are critical in health services delivery. Finally, the industrial/economic model provides little data for determining alternative techniques when managers wish to improve productivity. Input to output measurement, viewed in the classical sense, does not take into account the variety of variables involved in human services production (Packer 1983). Coupled with environmental, social, and client/family inputs into the productivity process, the accurate measurement of success by number of outputs (home visits) is logically sound but realistically tenuous, since each output may require varying amounts of different inputs.

Concepts that relate to health services productivity measurement include input, throughput, output/outcome/impact, efficiency and effectiveness (Curtin and Zurlage 1986, Edwardson 1985, 1989, Gortner 1987, Haas 1984, Klinger and Nalbandian 1985, Linn and Karsten 1982, Oni 1984). Most frameworks of productivity include the output per input ratio but expand the model to include a plethora of variables that impact on the process (Curtin and Zurlage 1986, Edwardson 1989, Linn and Karsten 1982, Oni 1984, Proceedings of the National Conference on Nursing Productivity, 1986). Therefore, productivity in health services is probably best measured using a model based on the basic industrial

model of input-output, and supplemented with the management science contribution in analyzing the work activities (inputs/throughputs), with considerable expansion and definition of the variables that impact on the process.

The core concepts mentioned above (input, throughput, output/outcome/ impact, efficiency, and effectiveness) represent a cyclical, open system model of productivity from input of resources, thoughput or the process of the work activity, to output, outcome, and impact (Dean, Ferris and Konstans 1985). Efficiency and effectiveness are attributes that affect both the work activity and the end result of the activities.

Inputs include human and nonhuman resources. Human resources include the number, mix, and quality of personnel ("personnel characteristics," Edwardson 1989), sometimes called manpower, and client characteristics (Curtin and Zurlage 1986). Nonhuman resources include but are not limited to capital, supplies, equipment, and facilities (Linn and Karsten 1982), technologies (methods of providing the service, unit structural design, care planning and recording systems) and management (motivation, work methods, control) (Edwardson, 1989). In the manufacturing sector, inputs are more easily quantifable than in the service sector, where the inputs of the health practitioner and the client are unique from case to case.

Throughputs are defined to mean the process of transforming inputs into outputs (Linn and Karsten 1982). Confusion over whether the end result of

health services in output, outcome, or impacts is of importance here because the definition of throughputs expands or contracts based on that point in the productivity process when "output" has been achieved, whether it is indeed the output (completion of the service or activity), or some change in health status in the client (outcome/impact). In the delivery of nursing services, throughputs have traditionally been viewed as the application of the nursing process (assess, plan, implement, evaluate) with the end goal being a measurable change in client outcomes.

Output "is what is produced by processing input" (Linn and Karsten 1982, 178) or "the work accomplished" (Davis and Levine 1986, iii) and is the product of the production process. In most areas of health services delivery, output has not been defined with any clarity and may reflect either the throughput process, completion of the provided service, or the health status output (Linn and Karsten 1982). In most nursing service areas, the output is "ill-defined, described, and highly varied. There is not a standard product or even a 'line' of products" (Proceedings of the National Invitational Conference on Nursing Productivity 1986, 4). In home health care the definition is somewhat more defined: the completion of a home visit in a manner acceptable to the nurse, client, agency, and funding source (Benefield 1988, Weinberg and Brubaker 1988). However, as is true in most client centered service productions, there is no standard home visit or line of products.

"**Outcome** is the result of producing output" (Linn and Karsten 1982, 178) and is the short term change(s) in health status of the client (Proceedings of the National Invitational Conference on Nursing Productivity 1986). In the health service sector, there is a lack of consensus on what constitutes an appropriate outcome. Coupled with the difficulty of directly relating selected inputs to outcomes, progress in the use of outcomes as indicators of productivity has been slow.

The **impact** of the service, the long term health maintenance or change in the client, is often not even included in any discussion of productivity, because there are many variables (other than those involved in the productivity process of producing outputs) that influence the long term health of the client.

The **efficiency** and **effectiveness** of the productivity process have been discussed to varying degrees in the literature on productivity. It is generally assumed that productivity measurement attempts to measure efficiency; certainly the "outputs per given inputs ratio" provides data on the efficiency (quantifable number of outputs) or quantity of units produced or services provided. Because the more classical economic model of productivity measurement assumes that both inputs and outputs can be measured in quantifable terms (Packer 1983), efficiency has always been associated with productivity measurement.

Effectiveness, however, is a concept more specific to human services, particularly health services, and is defined as "the degree to which a production

process has accomplished what it was intended to do" (Linn and Karsten 1982, 179). This definition assumes that there is some agreement on what the provision of services is to accomplish, and in much of health care this is still being defined. The end result of the provision of services in the health sector must be both effective and efficient. Prior to the introduction of the prospective payment system for Medicare clients in the hospital setting, there was greater concern for effectiveness in service delivery than for efficiency in the provision of services. It is now apparent that the outputs of health service delivery include consideration of both the quantity and quality of services produced (Epstein 1982, Linn and Karsten 1982, Proceedings of the National Invitational Conference on Nursing Productivity 1986).

There appears to be a lack of consensus in the nursing literature regarding the operational definitions and descriptions of several of the concepts as they relate to nursing productivity. It is of concern that there is not yet a "common language" or degree of understanding about ideas related to productivity. When compared to the general management and public administration literature where concepts such as efficiency and effectiveness have been more clearly conceptualized, the precise usage of these terms has not occurred in nursing, particularly when relating these ideas to the practice setting (Proceedings of the National Invitational Conference on Nursing Productivity 1986, Jelinek and Dennis 1975).

As an example, output and outcome have been used interchangeably (Hegyvary 1986, Haas 1984). In other writing, the use of patient classification systems is placed as a variable in the throughput process in the productivity model (Edwardson 1985) when conceptually it is more likely an input resource useful in managing staff mix. The possible reason for this lack of consensus may include the relatively recent concern over the "productivity issue" in health services delivery and, as reported by the National Invitational Conference on Nursing Productivity (1986), the resultant gaps in research and conceptualization in the field.

Curtin and Zurlage (1986) attempted to expand the productivity paradigm and stressed that consumer served inputs (client inputs) are as important as producer served inputs (nurse inputs). Their work is the most progressive in attempting to capture what a productivity model means in nursing and health services delivery. Nursing is viewed as a unit within a larger open system productivity paradigm, and Dennis (Haas 1984) documented the complexity of the model and states that "no single form can define a comprehensive measurement for nursing productivity." The current research priority in the area is to identify all possible variables that influence the model (Curtin 1986).

The results of the National Invitational Conference on Nursing Productivity (1986) indicated agreement on: a definition of productivity that includes inputs, outputs, and outcomes, efficiency, and effectiveness, and the relationships among

them; the multi-dimensionality of elements of nursing productivity; the existence of seven domains of productivity that include "client/family, personnel, organizational structure, policy, systems, finance, and environment" (63); efficiency defined as a measure of outputs to inputs, a "short range approach to productivity assessments which considers outputs only in terms of volume of services produced" (62); and, effectiveness as a measure of outcomes in relation to inputs, a "longer-range approach that assesses results in terms of clients' status" (62).

Nurse Attributes as Constructs of Input in a Productity Model

Variables that form constructs of input in the productivity model include: nurse attributes, organizational climate, leadership behavior, group process, client/family profile, and resource quality and access (Hernandez, Kaluzny, Parker, Chae and Brewington 1988). The individual nurse variables, defined as knowledge, skills and abilities (KSA), provide the input for nurse decision making and action that leads to outputs, and client centered outcomes and/or impacts. These interfacing sets of knowledge, skills, and abilities involve cognitive, psychomotor, and affective domains and have received limited systematic evaluation in the research literature on nurse productivity, even though "nurses approach the practice of nursing with certain expectations ...weighted by their

education and skills and modified by their experience" (Jelinek and Dennis 1975, 32).

However, individual attributes and abilities have been identified that enhance nurse skill and effectiveness in both the performance of job activities and client outcomes. In a review of the nursing productivity literature for the years 1970-1974, Jelinek and Dennis (1975) identified nurse productivity input as focusing on redefining the nursing role. Categories of input variables included personal characteristics and aspirations, education, skill categories, and nurse role and attitude. Examples included Christman (1971), who identified a relationship between level of education and the quality and quantity of work. Research focusing on hospital based nurses indicated that success is perceived in those who demonstrated ease in dealing with "bureaucratic role orientation," e.g. functioning as part of a system (Kramer 1970, Hurka 1972). Based on their review, Jelinek and Dennis suggested the need for more investigation of nurse attitudes and their relationship with other professionals (1975).

In Curtin and Zurlage's productivity paradigm, nurse inputs also focused on broad, undefined categories of variables and included education, skills, experience, interpretation, coordination and attitude. They further separated throughput from input variables and distinguished throughput as clinical reasoning, use of the nursing process, and patient teaching (1986). Earlier work by Haussman, Hegyvary, and Newman (1976) focused on the complexity of the

nursing care process and quality of nursing performance. Specifically, a variable set titled "staff perceptions" included, among other items, (1) RN acceptance of change and (2) clinical orientations as factors influencing RN performance.

Benner's (1984) descriptive research studied nurse effectiveness and documented five levels of competency in hospital clinical nursing practice (from novice, advanced beginner, competent, proficient to expert). She identified the seven domains of nursing practice as the helping role, teaching-coaching function, diagnostic and monitoring function, management of rapidly changing situations, administering and monitoring therapeutic interventions and regimens, monitoring and ensuring quality of health care practices, and organizational and work-role competencies. In this research there was no attempt to characterize individual nurses according to proficiency levels, rather clinical situations were judged "as reflecting a particular level of practice" (15).

Knowledge and Abilities of Community Health Nurses

Education and skills necessary for community based nursing practice, of which home health care is a part, are different from skills necessary for hospital based practice.

Community/public health nursing is a speciality area of nursing and as such includes both the science of nursing and the science of public health. "Community health nursing...requires mastery of specific nursing and public health sciences, a high level of technologic nursing skills, sound nursing

judgement, and an appreciation of the interplay between human populations and health phenomena" (Turner and Chavigny 1988, 41). Key concepts in the definition of public health nursing include: the synthesis of public health sciences and nursing theories, a focus of practice that includes the entire community as well as individuals, health promotion and primary prevention activities, a practice involving work in multidisciplinary teams and programs, and "involvement in health promotion and primary prevention community-based efforts for risk reduction" (Archer and Fleshman 1985, 6).

A clinical model for community health nursing includes the following seven principles used within the nursing process (assessment, planning, implementation, evaluation): "the delivery of professional services, the concept of community, the prevention and control of disease to promote the health of populations, the use of multidisciplinary resources for service delivery, the constant surveillance of the community to monitor hazards to the health of the public, the concept of provider outreach or providing intermittent services to groups to meet previously defined needs, and the family as the unit of concern within the population" (Turner and Chavigny 1988, 41). The model is drawn as three overlapping circles: service delivery, community orientation and prevention and control, with the family as the unit of service and the area of overlap among the three circles. The activities and skills of community health nurses include activities that promote the concepts within the schema.

Commonalities that should exist in RNs in community health nursing include (1) a practice focus on population aggregates versus direct client-nurse interactions, (2) educational preparation including knowledge of public health sciences, nursing science, and advanced nursing practice in the areas of individual physical assessment, family and community assessment, (3) a philosophical orientation toward prevention of disease, (4) a practice that involves interdisciplinary work, and (5) an emphasis on cost-effective practice (Turner and Chavigny 1988). Although the practice may involve direct provision of service to an individual, the overall focus should be maintenance of well being in the larger population with the family as the primary unit of service (Leahy, Cobb and Jones 1982).

Anderson and McFarlane (1988) identified similiar role skills for the community health nurse: primary care management of client/families, community advocacy, consultation and research. These are translated as (1) "management of client/families in a continious and comprehensive way, (2) functioning as an advocate to the client/family/community related to their health needs, (3) investigating needs, providing evaluation and designing solutions, including programs, that meet the needs, and (4) skill in problem solving issues in resource allocation (human, fiscal, and physical)" (375-383). Others authors include management and public speaking skills (DeGeyndt and Hallstrom 1971) and

greater comfort and skill in independent decision making skills specific to community health nursing (Jelinek and Dennis 1975).

Keating and Kelman (1988, 9) stated: "community health nurses diagnose complex, bio-phycho-social problems in families, teach health practices, counsel, and refer to other health care providers as necessary." They viewed basic public health skills (sanitation, environmental health, statistics, and epidemiology) as complimentary to skills and abilities in interpersonal communication and nursing knowledge (Spradley 1981, Hall and Weaver 1985). Fromer (1979) identified specific skills that are most often cited as critical to community health practice: teaching, function as a change agent, observation of health factors, client advocacy, cooperation with other health workers, and skill in physical assessment.

Hall and Weaver (1985) structured the nurse role under the framework of "case manager." Interestingly, they identified what they call "qualities" of a good community health nurse: (1) a combination of expert nursing care and "sound judgement in independent decision making" (467), (2) "intituitive senses" that can be incorporated with the scientific approach, (3) creative thinking, and (4) an ethical basis of practice. They stated that the ethical basis of practice (understanding one's ethical beliefs) correlates with a strong reality orientation and ability to conceptualize.

In review, the knowledge and skills specific to community health nursing include an understanding of public health principles applied in the community

setting, skill in health maintenance and disease prevention, a focus on family (or the larger community) versus the individual as the primary unit of service, the ability to coordinate family needs and community resources, and a more interdisciplinary and independent decision making role than nurses in the acute care hospital setting.

Research studies offer little insight into particular knowledge and abilities related to productivity in community health nursing. Jones, Davis and Davis (1987) reported on a focus group study of nurse educators and governmental health agency representatives that resulted in a comprehensive list of competencies for RNs working in governmental health agencies. The recommended knowledge and skills include a detailed review of knowledge and abilities reported by authors cited earlier, with specification for functioning in governmental agencies.

As part of a study of the relationship between productivity expectations and staff nurse job satisfaction, nurse managers (N=71) were asked to write a definition of productivity of staff public health nurses. The most frequent responses included "efficiency of practice, number of people served, effectiveness of care, and prompt and appropriate service delivery" (Mattner 1988). No attempts to identify more specific knowledge and skills were reported.

Knowledge and Abilities of Home Health Care Nurses

Home health care is a division of community health nursing and is defined as "health services that are provided to individuals and families in their place of residence for the purpose of promoting, maintaining or restoring health, or of maximizing the level of independence, while minimizing the effects of disability and illness, including terminal illness" (Warhola 1980). Home health care is not "intensive, full-time care but rather...is intermittent, short term care. Home care can either precede or follow institutionalization" (Wiles 1984), or can occur independent of admission or discharge from an acute care health facility. In contrast to community health nursing, the main focus of home care is illness care and stabilization of individuals (driven by HCFA Medicare reimbursement for these services) and not health maintenance and disease prevention services.

Studies have not specifically reported on the input, throughput, outcome process specific to home health care, but Harris (1989) stressed the importance of considering both the efficiency (from the financial perspective) and effectiveness (quality of care issues) inherent in home health care RN productivity measurement.

Skills that have specifically been identified as necessary for effective home health care practice include knowledge of public health principles, family and individual counseling, health education and strategies of adult learning (Benefield 1988) and "independent judgement and practice without assistance" (Jarvis 1985,

334). Mundinger (1983) described characteristics unique to public health nurses in home health care agencies as "valuing flexibility and self-direction in their work...inquisitive problem solvers," assertive in attitude, with political savvy, and comfort with a collegial atmosphere in managing client care (107, 110). Interestingly, her study also identified that nurses were providing both illness care (which was reimbursable) and health maintenance/disease prevention services, which was not a reimbursable service but is considered part of professional community health nursing practice.

Research studies on productivity of home health care nurses are scarce. One descriptive study defined productivity as efficiency in visit completion, and reported the expected and actual number of RN visits completed per unit of time for a sample of home care agencies (Spoelstra 1988).

Storfjell (1988) identified and quantified the components of the nursing home visit by field study, collecting data for "specific nursing activities during 75 observed home visits made by 26 nurses in eight certified home care agencies throughout the United States" (1989, 61). Among other results, she suggested that "it is possible to measure activities, complexity, and time" (1988, 128) to quantify visits, and the relative time percentages of visit-related and nonvisit activities were accounted for. The visit activities included assessment, education, physical care, psychosocial, and visit coordination. Nonvisit activities included documentation, nonvisit coordination and travel (Storfjell 1989). This study

included conceptualization and discussion of both efficiency and effectiveness in productivity measurement.

Hozdic (1988) reported on a 1984 study of differences in perception of the value of selected productive behaviors among administrators, managers, and community health nurses in eight VNAs in the northeast, and cited a survey that listed "15 sample behaviors" which participants rated in importance. The behaviors included hands on skills, "independence in self-directing work, ability to plan and organize work," number of patient visits completed within the month, "professional offices held," communication skill, "attendance/dependability" (37), etc. These behaviors included an efficiency measure, clinical abilities, and professional development; no information was reported to explain the origin or development of the sample behaviors.

Matner, Becker, Walker, and Sands (1988) developed a tool for use in assessing continuing education needs of home health RNs. A preliminary list of "kinds of behaviors and skills important to competence in home-based nursing" was developed using the expertise of the research group. The list of categories included "introduction to home care, psychosocial maintenance of the system, technical aspects (knowledge), patient assessment, legalities, case management, application of skills, and communication" (39). The researchers report that the tool was validated by a convenience sample of 15 administrators and 27 staff

RNs who ranked the importance to the behavior/skills. Highest ratings were given to patient assessment.

In review, knowledge of productivity of home health nurses is scant save the traditional efficiency measure of number of visits completed per unit of time. Research to determine visit activities has provided information on categories of activities that are included in visit and nonvisit time. Results of the cited studies that attempt to identify behaviors of home health nurses, although intuitively appealing, suffer from methodological problems and should be intrepreted with caution.

Major Types of Home Health Agencies

Home health agencies are divided into types based on the administration and organizational structure and include official (governmental), voluntary, combination, private not for profit, hospital based, and proprietary. Governmental agencies are those under the auspices of a local, county, or state government and receive funds from state and local tax sources. These agencies usually provide other health maintenance and disease prevention services in addition to home health services (Wiles 1984).

Voluntary agencies are private, nonprofit organizations governed by a board of directors and receive the majority of their funding from individual contributions, charitable funds, and other nonofficial sources. "They primarily,

but not exclusively, provide home health care services" (Clemen-Stone, Eigsti and McGuire 1987, 728).

Combination agencies use combined funds from governmental and voluntary sources and usually function as a combined governmental and voluntary agency. Private, nonprofit agencies are privately owned, tax exempt, and governed by the owners of the agency. Hospital based agencied are run and governed by a hospital. "Their revenue and tax sources depends on the type of hospital that operated the agency" (728). Proprietary agencies are governed by the owners, which may include large corporations or small private ownership, and are ineligible for nonprofit tax status. The sources of funding for private, hospital based, and proprietary agencies include governmental and third party insurance reimbursement and individual payment for service (Clemen-Stone, Eigsti, and McGuire 1987).

At issue is whether the financial structure of a home health agency influences the behaviors of nurses in the agency. Is the nurse's role in coordinating services between client and community affected by the profit or nonprofit status of the agency? Since coordination of care is not a reimbursable service, per se, will this type of behavior be altered? Carpenter (1986) posed these questions and seemed to be suggesting that this may be the case. However, Balinsky and Shames (1985) suggested that the profit and nonprofit

agencies are more alike than different and both share an interest in cost efficiency and return on investment.

Summary

In summary, productivity theory explains a complex, interacting, open system model of nursing productivity with multiple dimensions and variables. Nurse inputs are a construct of input in a model of productivity and are defined as knowledge, skills, and abilities that involve psychomotor, cognitive, and affective domains. There are particular nurse inputs that are unique for effective home health care practice. Little is known about how these inputs are operationalized in the different types of home health agencies.

Productivity is a "complex concept that involves economic, quality and effectiveness elements as well as political and social values" and "is a function of compound effects among complex variables" (Buntz 1981, 304). The intangible nature of many of the productivity variables makes a purely economic approach to productivity measurement inappropriate, rather a model that includes inputs, throughputs, outputs, and outcomes is more useful for assessing nursing productivity.

There are many gaps in the study of nursing productivity. Results of the National Invitational Conference on Nursing Productivity (1986) suggest several refinements to current models of nursing productivity including: "developing a more dynamic view of nursing productivity" (12) (current models illustrate a

static, non-cyclical framework), creating relative weights for the variables that influence productivity, expanding productivity research to health sectors beyond the acute care hospital setting, using more "cost and reimbursement methods" (12) and other financial variables in the models, evaluating client role and impact on productivity measurements, and evaluating the changes on client populations as a result of client involvement.

Productivity can be measured at several levels, individual, work group, division, or agency (Sink, Tuttle, DeVries 1984). Higgins and Dice (1984) suggested that professional workers have the greatest impact on agency success, therefore "it is important to maintain and improve their service delivery effectiveness" (303). Research agendas in nursing productivity recommend that study is needed at the "macro" or organization level and the "micro or RN/unit level," including knowledge about nurse provider characteristics that relate to productivity (Proceedings of the National Invitational Conference on Nursing Productivity 1986).

CHAPTER III

METHODOLOGY

Study Design

This study investigated the theoretical and applied aspects of the definition of productivity of home health care RNs and included both descriptive and correlational research designs. Both quantitative and qualitative (interpretative) (Artinian 1988) methods of data collection and analysis were used to more fully document attributes and themes of the concept of productivity. Between methods triangulation (Duffy 1987, Mitchell 1986) was used in the development of the dimensions of RN productivity in home health care nursing. The planned steps and samples in the study design are outlined in Figure 1; Figure 2 outlines the actual samples and valid responses in each step of the study.

The first step in the study involved semi-structured face-to-face interviews with a sample of eight home health care nurse managers within the local region, and Delphi method questionnaire (round one of three) administered to 12 nurse managers from preeminent agencies throughout the country. These methodologies served to identify and provide the distribution of a set of

FIGURE 1

PLANNED STEPS AND SAMPLES IN THE STUDY "PRODUCTIVITY MEASUREMENT FOR HOME HEALTH CARE REGISTERED NURSES"

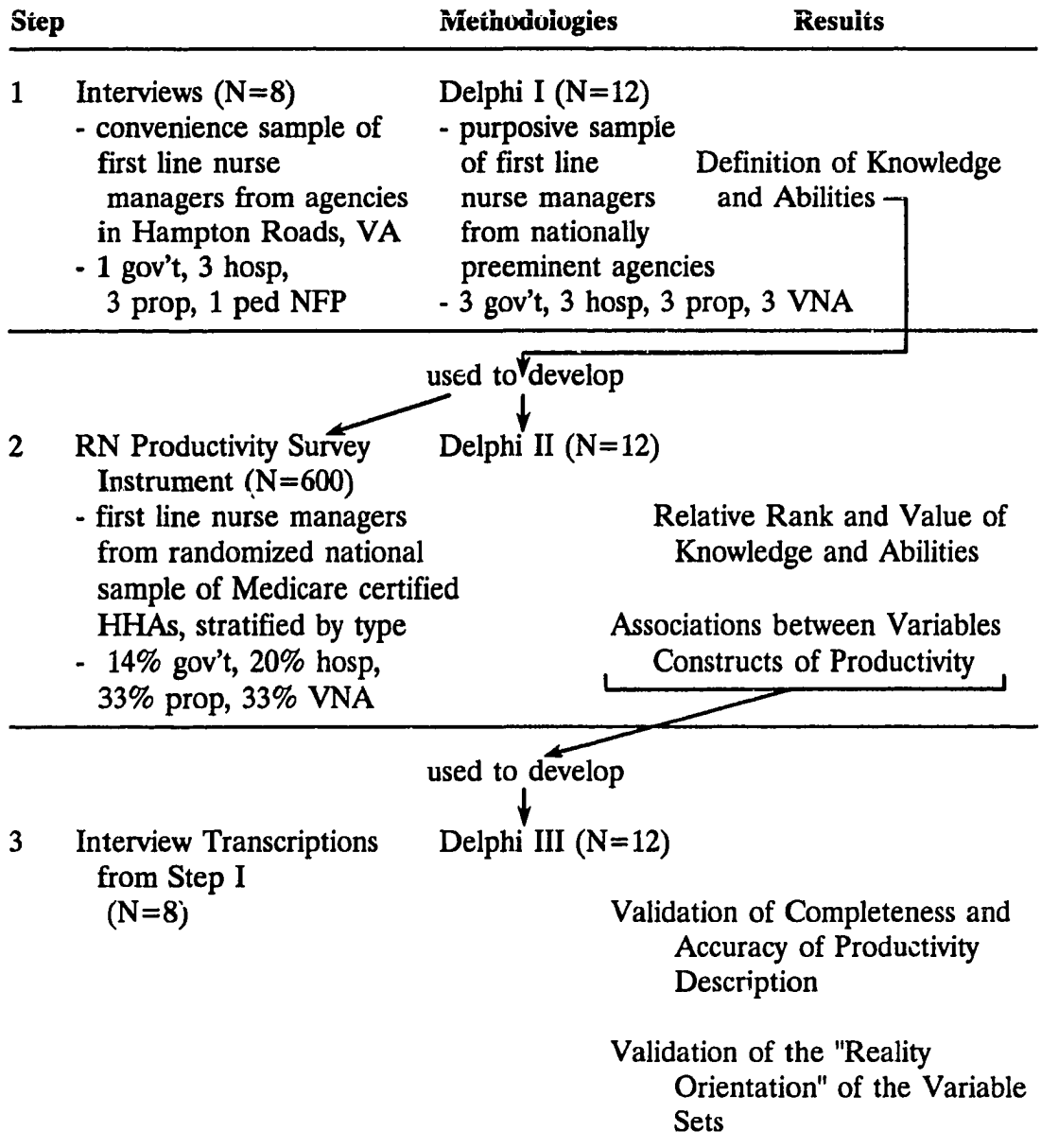

FIGURE 2

ACTUAL STEPS AND SAMPLES IN THE STUDY "PRODUCTIVITY MEASUREMENT FOR HOME HEALTH CARE REGISTERED NURSES"

Step	Methodologies	Results
1	Interviews (N=8) - convenience sample of first line nurse managers from agencies in Hampton Roads, VA - 1 gov't, 3 hosp., 3 prop., 1 ped., NFP	Delphi I (N=12; 100% response) - purposive sample of first line nurse managers from nationally preeminent agencies - 3 gov't., 3 hosp., 3 NFP
		Definition of Knowledge and Abilities
	used to develop	
2	RN Productivity Survey Instrument (N=337; 56% valid forms returned) 17% gov't. 23% hosp. 25% prop. 35% VNA	Delphi II (N=10; 83% response) Relative Rank and Value of Knowledge and Abilities Associations between Variables Constructs of Productivity
	used to develop	
3	Interview Transcriptions from Step I (N=8)	Delphi III (N=11; 92% response) Validation of Completeness and Accuracy of Productivity Description Validation of the "Reality Orientation" of the Variable Sets

productivity variables (Yin 1982, 49): a tentative definition of knowledge and abilities that characterize the productive home health care nurse.

Based on the set of knowledge and ability variables, an instrument was developed, tested, and used (Converse and Presser 1986) in step two of the study to survey the relative value and rank of these variables among a randomized national sample of 600 nurse managers in the four major agency types (governmental, hospital based, proprietary, and voluntary). The survey instrument was used to investigate the nurse managers' perceptions and attitudes related to these variables (which variables are most important? what is the relative value and importance of these variables?). The resultant profile of variables was quantitatively analyzed to identify relative value of each of the items, correlations between variables, and dimensions or constructs of productivity in home care RNs. Concurrent with the national survey, data gathering and feedback on the completeness and relative rank of variables within the profile occurred during the Delphi round II procedure.

In step three, the dimensions were further refined by the established Delphi sample of 12 home health nurse managers during the third round of the Delphi procedure. The rank ordering from the Delphi II procedure and qualitative suggestions from survey respondents were reviewed by panelists to determine whether the views and description of productivity were correct and valid.

Then, using the coding scheme and correlational packages developed from quantitative data analysis of the survey responses, the Delphi III questionnaire responses and interview transcriptions were reviewed to elicit qualitative examples that supplied richness and detail and offered insights into the "reality orientation" of the variable sets (Knafl and Webster 1987).

Analyses of interview transcriptions and Delphi questionnaire responses served to capture "qualitative examples of specific quantitative variables" (Knafl and Webster 1988, 196) and offered "privileged information" (Sieber 1973, 1340) and insights into the knowledge and ability variables that comprise RN productivity. The goal was to illustrate the representative "true and full picture" (Duffy 1987, 132) of the concept of productivity in home health care nurses.

In this study, several methods of data collection (between methods triangulation; Duffy 1987), namely interviews, Delphi method (Linstome and Turoff 1975, Macmillan 1971, Radford 1977), and survey were used. The results were analyzed to produce a distribution of valid productivity variables and seek cross-validation of the knowledge and ability variables and their importance (Sieber 1973).

Limitations

The sample for this study was selected from the membership list of Medicare certified home health care agencies and therefore the sample was limited to these agencies. Since this study reflected the dimensions of

productivity elicited from the first line manager it did not include the executive level manager or characteristics of the organizational environment.

Samples

The population for this study included first line nurse managers working in the four major types of Medicare certified home health agencies: governmental, hospital based, proprietary, and voluntary. A fifth type of agency, the private not for profit, was not included in the sample because the heterogeneous membership, including hospital sponsored free-standing, proprietary-like agencies structured as private not for profit, and church or nursing home sponsored agencies, did not represent a unique subgroup.

Separate samples were selected for each of the interview, delphi, and survey methods. Purposive sampling was done for the interview and delphi methods; and proportionate stratified random sampling of the 4808 Medicare certified agencies was used to select those agencies (N=600) who received the mailed survey instrument for nurse manager completion.

Sample for Interview Method

A convenience sample of eight home health care nurse managers within the local region were selected for participation in the preliminary interviews. Criteria for selection included (1) employment by a Medicare certified home health agency, (2) full time work in supervision of RNs in home health care, and (3) at

least one year of experience in clinical management of RNs including at least six months in home health care. Agency types included one governmental, three hospital-based, three proprietary (one providing only pediatric care), and one pediatric hospice private not-for-profit agency.

Sample for Delphi Method

The purposive sample for the Delphi procedures consisted of 12 nurse managers from preeminent agencies throughout the country (three representing each agency type). Panelists were selected to be among the most knowledgeable in the field (Couper 1984, Goodman 1987, Hopkins 1972). Representatives of the following organizations or institutions, considered to be the leadership in the field, were asked to suggest names/agencies for inclusion in the Delphi: the National Association for Home Care (NAHC); 1988 section directors for NAHC representing proprietary, voluntary, official, and institutional-based agencies; four of the nine operational graduate programs in home health care administration (selected for geographic diversity); the Public Health Nursing Section of the American Association for Public Health; and the Community Health Accreditation Program of the National League for Nursing.

Each NAHC section expert was requested to identify three or more agencies considered preeminent in the home care field; the nurse faculty were asked to identify three or more superlative agencies regardless of type, and a follow-up question prompted the identification of agencies in the other category

types if they had not been mentioned. The National League for Nursing representative was asked a similar question, requesting three preeminent agencies within each of the four major types. Some experts declined to identify any agencies as superlative, others provided lists of five to 10 agencies.

The responses were tabulated and the three agencies identified most frequently within each type were selected. Several agencies ranked equally and occupied the third position; agency selection was then made based on illustrative data that was provided by the experts when initially identifying the agency.

An explanatory letter was mailed to the 12 agency directors to describe the purpose and extent of involvement of the Delphi procedure, the method of agency selection, and secure their agreement to participate. They were asked to name a nurse manager who best represented the agency philosophy and who would participate in the three survey rounds. Telephone contact was made with agency directors to confirm participation and to identify the nurse manager. No agencies declined participation, however one agency identified itself as non Medicare certified and was replaced with the agency of that type next in rank. Follow-up explanatory letters were sent with the Delphi Round I Questionnaire to the specific nurse manager. No agency or manager substitutions occurred once the Delphi rounds began.

Sample for Pilot Survey

A convenience sample of 40 nurse managers whose agencies held membership in the Virginia Association of Home Care and who sent a representative to the 1989 annual state meeting were mailed a cover letter and the pilot survey for completion. During the state association annual meeting the researcher was afforded a five minute segment to introduce self and request participation in the study. Survey response rate equalled 75 percent or 30 returned forms, with 29 valid for analysis. Thirty surveys were returned within 14 days of mailing.

Sample for National Survey

The following assumptions were made in determining the sample size for the national survey of nurse managers:

1. For 90 percent power at five percent significance level, and considering a correlation of greater than or equal to 0.4 to be an effect worth detecting, the sample N for the test Tau C equals 58 per agency type. The N rises to 106 for a correlation of 0.3 and was originally considered in this study in analyzing the data in toto (Kraemer and Thiemann 1987).
2. The appropriate sample N for factor analysis varies among authors. Kim and Mueller (1978) identified a sample equal to 51 cases more than the number of variables under consideration. With 35

variables, N equaled 51 plus 35, or 86 valid responses. However, Loo (1983) suggests a larger minimum sample of 200, arguing that correlations (from which the factor matrices are based) from a sample of less than 200 have too great a sampling error.

3. Response rates vary from 10 to 90 percent, depending on the population surveyed, the type and composition of the instrument and any incentives that may influence participation (Daniel 1975; Huxley 1980, Hansen 1980, Jones and Lang 1980).

Therefore, assuming 58 cases required for possible association testing within each agency type and a minimum 200 cases necessary for factor analysis of all strata combined, the minimum sample necessary for data analysis equalled 232 (58 x 4 = 232). Estimating an approximate 40 percent response rate to the mailed survey, the total sample to be surveyed equalled 600.

Random sampling was chosen to provide representativeness and independence of sampling of units (managers in home health care). The Health Care Financing Administration (HCFA) mailing list of 5688 certified home health agencies (current as of March 1, 1989) was used to select a stratified random sample of agencies by the four major types. Of the 5688 certified agencies, 4808 (85 percent) represented the total for the four major agency types.

To accurately represent the composition of agencies providing home visiting services to ill clients, proportionate stratified random samples were taken from

each of the four agency groups. Total annual VISITS by agency type, instead of total NUMBER of agencies by type, was chosen as the stratifying criterion. This represented the proportional volume of work actually being done in the field by the different type agencies. To explain, although fewer in number than other types, one agency type may provide a larger proportion of total visits (for example, Visiting Nurse Associations equal nine percent of the total number of agencies but provide 27 percent of the total visits annually; see Appendix A-1).

The Health Care Financing Administration supplied data on the number of Medicare certified agencies in the aggregate and by type as of March 1, 1989. Annual visit totals were obtained from tabulations done by the National Association for Home Care, using 1986 HCFA Medicare certification tapes, the most recent year for which data were available, and were used in determining the sample percentage by strata (Appendix A-1) (Mr. Robert Hoyer, NAHC, telephone interview by author, February 27, 1989). No data were generated by the Health Care Financing Administration on number or percentage of annual visits by agency type (Ms. Cheryl Hacher, HCFA, telephone interview by author, January 12, 1989; Mr. Robert Hoyer, NAHC, telephone interview by author, January 12, 1989).

Table 1 details the types of agencies and the percentage of total visits attributed to each of the four types. Removing the 19 percent of visits done by agencies titled "other" (private not for profit, combination, rehabilitation facility

TABLE 1

PERCENTAGE OF TOTAL ANNUAL VISITS BY AGENCY TYPE

Agency	**Percent**
Governmental	11
Hospital	16
Proprietary	27
VNA	27
Other Combined private not for profit = 16.8 combination = .8 other = 1.2 percent	19

and skilled nusing home), the resultant proportion of visits among the four major types included: governmental, 14 percent; hospital based, 20 percent; proprietary, 33 percent; and VNA, 33 percent. Therefore, to develop a sample population of 600 agencies, the distribution of agencies included:

- governmental	(14% of 600) = 84 agencies sampled from	1006
- hospital	(20% of 600) = 120 agencies sampled from	1458
- proprietary	(33% of 600) = 198 agencies sampled from	1821
- VNA	(33% of 600) = 198 agencies sampled from	489
Total	600	4774

Thirty four agencies that were included in the pilot survey were removed from the HCFA population list prior to sampling for the national survey mailing, leaving a total of 4774 agencies. The resulting list was perused for agencies in which a manager participated in the interviews or the Delphi survey. None were identified.

Instruments

Five instruments were used in this study: an interview format and questions guide, three Delphi questionnaires, and the Registered Nurse Productivity Survey.

Interview Format and Questions Guide

The interview format and questions guide (Appendix A-2) provided the structure and framework for conducting the interviews with nurse managers. The guide lists the introductory comments by the interviewer, a review of agreement to participate and tape the interview, a reminder to the manager to describe individuals by other than their given name, a list of questions (from general to specific, with a conclusion back to the broad question), and the debrief comments.

The purpose of the interviews was to identify knowledge and ability areas that managers see operationalized in productive RNs. One to two broad questions were asked to prompt the initial response in the manager, and seven more focused questions were used when the interviewee had not provided depth

in explanation in her initial responses. The goal was to elicit specific areas of knowledge and ability and examples, in the manager's own words, that represented productive RNs in their agency.

The interview format was reviewed by a panel of experts for ease in administration and content clarity. The same researcher conducted all eight interviews and later coded the responses into knowledge and ability areas.

Delphi Questionnaires

The Delphi questionnaire forms were developed by the researcher to begin the process of enumerating the knowledge and ability sub-dimensions of the productivity concept considered by nurse managers in preeminent agencies. The three draft Delphi questionnaires were developed prior to beginning the first Delphi round, then each questionnaire was further detailed and refined as results of the previous round were analyzed. The questionnaire formats were reviewed with an expert in survey research (Appendix A-3, 4, 5).

The first round questions were broad in focus and requested that the panelist describe those knowledge and skills that characterize the productive RN. One half of a standard letter size page was left for written response, and brief instructions at page bottom directed the questionnaire back to the researcher by a set date and indicated that a signature was not necessary.

Together, the purpose of the interviews and Delphi round I was to compile an exhaustive and highly descriptive base of knowledge and ability sub-dimensions that might be included in an operationalization of productivity.

The purpose of Delphi round II was to reflect to panelists the knowledge and ability items they had identified and to determine their level of agreement with the list, and their individual perceptions of important items. This questionnaire included a listing of the 35 items developed through analysis of Delphi I and the interview with nurse managers. Thirty of the items had been identified by members of the Delphi group; five were identified by interviewees, and were identified in the list as having been suggested as important, but not by members of the Delphi I group. The panelists were asked to (1) comment on the comprehensiveness of the description (e.g. the 35 item list) and (2) rank order the most important five to seven items. As with Delphi I, the questionnaire ended with instructions for return.

Delphi round III served to gain further agreement on important knowledge and ability variables. Panelists were asked to respond to the overall group rankings of the variables (which they each had ranked individually in round II). In addition, they were asked to respond to suggestions by panelists to combine or otherwise change certain variables, and lastly, offer insights into what factors facilitate or impede the development of this knowledge and these abilities in RNs. The purpose of this Delphi round was to gather illustrative and descriptive

details on the usefulness of the variables in operationalizing knowledge and abilities of productive nurses, which were then used in analyzing the predictive validity of the dimension profile.

Registered Nurse Productivity Survey

The Registered Nurse Productivity Survey was developed by the researcher as a two page structured instrument to identify the relative importance of the knowledge and ability variables among nurse managers in the four major agency types (Appendix A-6). This two page tool consisted of three sections. The first section included the previously determined 35 variables listed with a Likert seven point scale, with one representing less importance, seven representing more importance. Respondents were asked to identify each item's relative importance in their agency and setting.

In the second section, to further discriminate among the relative importance of specific knowledge and ability variables, managers were asked to rank the five most important knowledge and abilities of productive RNs by writing these knowledge and abilities in the spaced provided. In the third section, demographic information was elicited on agency type, number of annual agency visits, major payor source, and whether hospice/non-hospice visits were the majority of visits. Data elicited on the respondent included length of time in supervision of RNs within the current agency, total length of time in supervision of RNs during their career, age, gender, and race. A space for comments and

suggestions followed, and date for return and the researcher's name/address completed the page.

The survey organization and question format was reviewed for content validity with an expert in survey research, and the knowledge and ability items (variables one through 35) were reviewed by experts in nursing administration. A pilot test of the form using a convenience sample of 29 nurse managers indicated an alpha coefficient of .94, indicating good reliability of the total scale. Item to total correlations indicated all items contributed to the alpha and, based on this and the conceptual clarity of the items, none were removed from the instrument.

After pilot testing the instrument the following changes were made: (1) variable 23 was changed to read "non-nurse tasks" instead of "office tasks," (2) the question on annual visit total was modified to read "total number of visits done annually," (3) a question was added to identify agencies that provided a majority of Medicare hospice visits, and (4) selecting all the applicable educational preparation levels was emphasized.

Because there was a narrow dispersion of scores (5, 6, 7) and only limited response to the lower end of the Likert scale, changes were made to the tool to attempt to increase variance. These included adding a sentence to the instructions, "Some of the knowledge and skills are less important in your agency than others," and changing the anchors at point one and seven to read less

important (versus little importance) and more important (versus great importance).

Data Collection Procedures

Interviews

Eight agency directors within the local area were telephoned and requested to provide assistance in the study. The interviews were briefly described as part of a larger study to determine the knowledge and skills that characterize the productive RN in home health care. Directors were asked to suggest a first line nurse manager who might be interviewed about their judgments and perceptions of productive RNs. Telephone contact was made with the nurse managers to confirm their willingness to participate and an interview time was arranged. All interviews took place between March 27 and April 4, 1989. The interview was conducted in either the nurse manager's office or another quiet, private area within the agency. During the initial two to three minutes of conversation the researcher focused on gaining a professional rapport with the manager, and answered any questions the manager had about the study, confidentiality, and taping of the interview. All interviewees were assured that their comments would be kept confidential and, if used as a verbatim comment in the written study, no identifying information would be used.

One of eight managers expressed a high level of concern over taping the interview and how her comments would be used later. She indicated prior

experiences with newspaper reporters and perceived that altering and misrepresentation of her comments had occurred. The researcher reiterated the university sponsorship and Institutional Review Board approval of the study, and unlike the interview with the seven other participants, the researcher verbally read each interview question to the manager prior to the interview. The researcher then offered to cancel the interview. The nurse manager consented to be interviewed and taped and the interview proceeded.

In all interviews, the tape recorder was placed in an unobtrusive location between the two persons. The tape ran throughout the entire interview and upon completion of the formal interview the tape was turned off and the researcher asked if the manager had further comments/questions, responded as necessary, and ended the meeting.

The taped interviews ranged from 20 to 40 minutes, and were transcribed verbatim. Managers were identified by an alphabetic letter, the city in which the agency was located, and the date and time of the interview.

The broad question, "how do you describe the productive RN; what do they look like?" was used to initiate the interview. Techniques to seek manager elaboration on specific areas were used (Babbie 1973), such as "**how** are they more organized," "what **exactly** about...makes the nurse more productive," "is there anything special about the way they teach clients." The more focused questions listed on the interview format were used as follow-up in areas that had

not been mentioned or where the manager needed more structured questioning to focus their thoughts. These interview data provided information about past and present experiences with productive and nonproductive RNs, specific knowledge and ability areas, the conceptual dimensions and combinations of dimensions of productivity, and insights into the nature of managing home health care personnel and variations in experiences.

The managers interviewed were comfortable in communication skills, seemed at ease during the process, and were willing to share numerous thoughts and insights. Many had thoroughly prepared, meaning that they had given thought to the purpose of the interview, and mentioned this as they were describing the productive RN. Many mentioned that the dimensions were complex and interrelated, and then elaborated on their perspective of the major dimensions. Typical of mid level managers, their need was to quickly proceed to the heart of the meeting, and all were comfortable with the interview format in which this was done. The ability to articulate and conceptualize varied among the managers; clearly there was a range of sophistication in the manager role.

Delphi Procedures

The three Delphi rounds occurred during the time period March to August, 1989. Delphi I and II were spaced 10.5 weeks apart, Delphi III followed six weeks later. The Delphi agency sample was selected (as described earlier), and the specific title and address of each participant (nurse manager) was received

from the director of the agency. An introduction letter was then sent to each agency director to document the study and agency participation (Appendix A-7). In three cases, agency directors requested that an additional telephone call be made to the nurse manager at their work site, and this was done. All nurse managers agreed to participate in the study.

The cover letter that accompanied each questionnaire (Appendix A-8, 9, 10) explained the purpose of the particular Delphi round, requested prompt completion and return of the questionnaire, stressed the value of the panelist's participation and the confidentiality of responses, and summarized the survey analysis steps and what was to be expected in the next Delphi round.

As Delphi questionnaires were returned the questionnaire and return envelope were separated and the city of postmark was noted and matched to a list of participant addresses. On the due date for questionnaire return, handwritten reminder postcards were mailed to panelists whose cities had not been matched to a returned envelope.

The first round Delphi response rate was 100 percent, with one questionnaire returned after the date for inclusion in initial survey instrument construction. Review of the late returned questionnaire identified no new knowledge and ability categories, but did provide illustration of other items already identified by other panelists. The questionnaire was transcribed, for use in later analysis of survey results. The second round Delphi response rate was

92 percent (11 of 12), with a yield of 10 valid responses (again one questionnaire was returned after the date for analysis). The third round Delphi response rate was 92 percent (11 of 12); all questionnaires were valid and useable.

Delphi responses included both outlines and lists of variables and written narratives describing the productive RN. No panelists questioned the format or clarity of the broad question asked in the Delphi I procedure.

Survey

The higher the response rate from the mailed survey, the lower the sampling error (Jones and Lang 1980). Therefore, several strategies were used to induce greater response and to capture the late responders and the "potential non-respondents," the participants who otherwise may not respond and may be quite different from the "early" respondent. Overall, the aim was for the largest sample response possible.

Because of the possibility of a large non-response rate associated with the survey being passed from the director of professional services to a nurse supervisor for completion, a relatively large non-response rate was initially anticipated. Maintaining the anonymity of respondents would preclude knowledge of which agencies responded and therefore any follow-up and conversion of non-respondents. Rather than maintaining agency anonymity and doing a massive over-sampling to compensate for potential non-response, a

smaller sample of identified agencies were surveyed and follow-up strategies were used to convert non-respondents.

Strategies to convert non-respondents (Walters and Ferrante-Wallace 1985) tend to increase responses. Other actions such as the use of population checks, substitution of non-respondents or extrapolation based on late respondents (Walters and Ferrante-Wallace 1985) were unsuitable for this study. There were no comparable populations to cross-check, and the substitution of non-respondents with respondents would skew the response distribution.

The use of inducement methods (monetary and nonmonetary) may introduce bias in sample response and/or sample composition bias. The inducement may yield respondents who systematically differ from the sample frame (sample composition bias) and/or decrease the validity of the responses to survey items (response bias) (Jones and Lang 1980). Hansen (1980) found that monetary incentives yielded a significantly higher response rate and faster response, however the question of whether the responses are less complete because of use of the incentive cannot be answered. The "less complete" responses may not be less complete as a result of any external monetary/ nonmonetary motivation - rather they may be reflective of the sub-sample that otherwise would not have responded - the late responder/non-responder.

Contrary to Jones and Lang, work by Fantasia, Henig, Gochman, Adams and Jackson (1977) found that use of a personalized cover letter to health

workers increased response rate without methodological cost. A social utility appeal and an egoistic appeal in cover letter messages have been reported to be effective (Houston and Nevin 1977) and university versus private agency sponsorship yielded higher response rates (Jones and Lang 1980). Comparison among studies is difficult because of the varying samples and methodologies, however it does appear that focusing on clarity in the instrument (Jones and Lang 1980, Kalton 1983) and providing some type of incentives will increase sample response, but may not always improve the accuracy of the sample results.

The following strategies were used in this study to enhance the survey response rate:

1. inclusion of a personalized style in the cover letter, beginning with the egoistic appeal and ending with the social utility appeal;
2. instrument formatting with moderate response tasks and non-threatening questions preceding more difficult tasks and more threatening questions; and
3. use of a pre-survey postcard to agency directors summarizing the study and announcing the forthcoming survey, a post survey reminder note to those not returning the survey within 10 days, and a telephone call and repeat mailing of the survey as needed to the sample of governmental agencies, which represented the smallest N among the strata.

The process of survey distribution and return occurred during May-July, 1989. A pre-survey postcard was sent to the Director of Professional Services for each agency, alerting them that a survey related to the knowledge and skills of productive RNs would be arriving and requesting that they identify a nurse manager to pass the survey to for completion (Appendix A-11). Three days later a cover letter (Appendix A-12), survey form with agency name and address, and stamped addressed return envelope was sent via first class mail to the sample population. The mailing occurred seven days prior to the expected date of survey return.

The cover letter briefly explained the purpose of the study and asked that the Director of Professional Services identify the first line manager in home health who "best exemplifies your agency's philosophy" and pass the survey to that nurse for survey completion and return. The survey forms were color coded by agency type to aide in data tabulation and accurate assessment of agency type.

Returned agency surveys were identified on a master list and, 10 days after the initial survey mailing, reminder postcards (Appendix A-13) were sent to the 486 agency Directors of Professional Services from which surveys had not been received. New survey forms were sent to several agencies who contacted the researcher to request a survey after receiving the reminder postcard and, upon the request of one state health department, information on the study and

researcher was sent so that the study might be approved through their own research review board.

Telephone follow-up was done with agency managers within the governmental agency sample who had not returned the survey. In sample selection among agency types, the percentage of total annual visits was used as the stratifying criterion. The governmental agencies had the lowest percentage of visits, thus the lowest N in the total sample. Because of the conceptual importance of this agency type to home health care services, telephone follow-up was done to promote a sample size sufficient to do statistical calculations of within group associations. Telephone follow-up occurred between day 19 to day 28 post survey mailing.

At 18 days post survey mailing, the governmental agencies had a response rate of 57 percent rate, compared to hospital based, 55 percent response; proprietary, 42 percent response; and VNA, 57 percent response. The total N for valid surveys returned by governmental agencies equalled 46 of 48 returns.

At 38 days post survey mailing, or 10 to 19 days after telephone follow-up to governmental agencies, survey collection ended and analysis began. Total responses by agency type included: governmental, 74 percent; hospital based, 65 percent; proprietary, 46 percent, and VNA, 63 percent, equalling a total response rate of 60 percent. Of 600 surveys mailed, 576 were presumed received. Of

those, 343 were returned, giving a 60 percent response rate. Of the 343 returned, 337 surveys were considered valid and used for analysis.

For governmental agencies, 13 percent of the responses were received between day 19 and 38 post mailing, compared to 15, 9 and 10 percent for hospital based, proprietary, and VNA agencies, respectively. It is difficult to speculate whether the late returns from governmental agencies were prompted by the telephone follow-up, or illustrate the normal range of response time within bureaucratic agencies, or within any of the other types of home health agencies.

Data Analysis Procedures

Interview

Data analysis of the interview transcriptions included identification and coding of variables that managers related to RN productivity. All phrases or bullets of data that indicated a component of the productive RN were lifted from the interview in verbatim form. A master list of phrases/sentences was then organized to reflect categories of like items. Judgments of which items were similar were made based on the researcher's background knowledge of home health care and community health nursing roles and functions. Data from the first Delphi round was similarly tabulated. The Delphi and interview master list of responses were then combined and categories were identified by using,

when possible, one of the descriptors given by the Delphi panelist and/or interviewee.

An initial sort of the data "created" broad knowledge and ability categories. Sorting into cognitive, psychomotor, and affective domains proved cumbersome in that many of the knowledge and ability areas incorporated affective abilities. In other words, the affective components served as the qualifier for the requisite knowledge or ability area. Every attempt was made to keep the titles of the data groups in verbatim form, so as to capture the richness and maintain the intent of the respondent(s).

A list of 32 items was initially developed. Review of categories for content validity occurred during separate meetings with two expert nurse administrators - one a doctorally prepared nursing education administrator, the other a doctoral candidate nurse with background in nursing practice administration. Each was given the list of item headings with verbatim phrases of information listed after each heading. They were asked whether (1) the item was understandable to them (was the meaning of the item clear?) and (2) whether the descriptors "seemed to fit" within the category. Their verbal responses were noted on the researcher's form and changes were noted. The list was then reviewed with an expert in survey research and several items were separated into two, so that each item measured only one concept or idea. The final list included 35 items. Grammatical changes were made only where necessary to improve clarity.

Delphi Procedures

As with the interviews, data from the first round Delphi was tabulated to identify the total of knowledge and ability areas that were identified by the panelists. These data were combined with those from the interview transcripts to develop a master list, then categories and subcategories were developed to organize the data into distinct units or items (Weber 1985).

The second round Delphi was analyzed to determine the number of panelists that viewed the list of variables as comprehensive, with a listing and frequency of suggestions made to delete, emphasize, or otherwise change or combine variables. Responses were transcribed as written and categorized under the appropriate sub-question the panelist was responding to. Responses were tabulated to identify frequency and relative percentage of selection in ranking of the five to seven most important knowledge and ability areas. As five of 12 panelists used the seven category ranking, the one-to-five rankings were used in summing the frequency with which items were mentioned within all of the five categories.

Delphi round III reported the frequency and range of responses to the two questions which focused on the ranking of most important knowledge and ability areas and the one question related to combining/deleting/changing selected knowledge and ability variables. The written responses to the questions which dealt with facilitating/hindering the development of the knowledge and abilities in

RNs were transcribed as written and, where possible, like comments were tabulated. These communications were analyzed to illustrate the "reality orientation" of the variable set and offer insights into the "true and full" picture of RN productivity.

Survey

Data were analyzed first in the aggregate and then by agency type. The 35 knowledge and ability items were ordinal level measures. The write-in rankings were coded into discrete categories and treated as nominal level. Demographic data were measured as follows: nominal level measures included agency type, hospice visits (dichotomous), payor source, type of RN staffing, education, gender and ethnic background. Total number of visits was interval level, and supervision experience within the agency and total supervision experience and age were coded as an absolute number.

To compensate for the bias of item non-response and to enhance factor analysis of survey statistical results, values were assigned to missing responses among the 35 variables using the responses to other items on the survey to aid in the process (Kalton 1983). The mean of all responses to a particular item was used as the replacement value (Kalton 1983). Missing values were omitted from contingency table analysis. Missing values in the write-in knowledge and ability ranking or demographic variables were not recoded.

Frequency data were reported on the 35 productivity items and the demographic data. For this analysis the 35 items were considered ordinal level data and the median and range were reported as measures of central tendency. Frequency data for demographic information was reported in the form appropriate to the individual item, either median/range to represent ordinal level, mode to represent nominal level, and mean/SD to represent interval level data.

Internal consistency of the 35 items was assessed using Cronbach's alpha. A coefficient of greater than or equal to .70 (Nunnally 1978) was used to evaluate homogeneity. Data from interview transcripts and Delphi I responses were analyzed to assist in validating each of the variables. To determine significant differences in relative valuing of each variable by hospice and non-hospice agencies, the Mann Whitney U test for differences between the medians of two groups was used.

To further discriminate and expand upon the analysis of the 35 item "perception of importance" Likert type scale, the write-in rankings were analyzed to determine which variables were ranked highest in importance. The write-in data from the first 30 returned surveys were reviewed for the range of responses in ranking of most important knowledge and abilities. In initial coding of the qualitative data, each qualitative phrase was matched to one of the 35 variables already established, or to a new category.

New categories included (1) several combinations of sets of two previously identified variables, (2) unclear, non-codable, or missing phrases, (3) personality characteristics of the RN, and (4) a category of "other" variables that did not match any other category. These knowledge and abilities in the category "other" were understandable but not sufficiently distinct and specific to be coded as one of the initial item categories. Examples included "client's well-being # 1," "clinical skills," "integrates theory with practice," and "follow-up." These new categories were coded and labeled with a number, and the phrases included in the "other" category were tabulated to indicate frequency and transcribed verbatim into a list of "other variables."

The coding scheme was refined, the researcher reviewed the initial coding of the responses from the first 30 surveys, recoded as necessary to meet the refined coding procedures, and the coding procedure was used as a method of identifying the range of responses (Knalf and Webster 1988).

Percent frequency with which each variable was identified was reported for each of the five ranks from "most important" to "next in importance." Data were also combined and summed for the first two rankings and for all five rankings combined, and presented as the relative percent of managers who identified the variable.

Percent frequencies were listed for the qualitative write-in responses from the second Delphi round, first tabulated to indicate those variables ranked

highest, next in importance, etc. As was done with survey responses, data from the Delphi questionnaire was tabulated to indicate relative percent frequency of mention when rank one and two were combined, and when rank one through five were combined. Areas of congruence and differences were noted between the two samples.

Contingency table analysis was performed to determine significant associations between variables one to 35 using the entire response group. Tau C was used to identify associations between variables, and chi square was used as the statistical test of significance. The seven point Likert-type scale was reduced to a three point scale, thereby providing adequate cell frequency for the Chi square test.

For each type of agency, variables one to 35 were evaluated for the median, skewness, and kurtosis. For each variable, the Kruskal-Wallis Test was used to determine significant differences in median scores among the agency types. The seven point Likert-type scale was retained for this analysis. The qualitative write-in rankings were tabulated by agency type and evaluated against the qualitative responses of the other agency types.

Finally, exploratory factor analysis using the orthogonal rotation and principle components extraction method (varimax method) was used to identify constructs of productivity from the sub-dimensions (variables) identified by respondents. For this exploratory analysis, the data were considered interval

level (Munro 1986). All 35 items were used in the factor analysis. The 0.40 level was chosen as the minimum acceptable item loading (Nunnally 1978, Carmines and Zeller 1979).

Finally, to identify a profile of productivity variables that has predictive validity and is useful to managers in home care, the Delphi III responses were reviewed to determine the comprehensiveness of the variables and validity in the practice setting. A profile of productivity variables useful to managers was then developed, based on Delphi and survey responses and factor analysis results. Major themes or constructs were identified as categories, and the subcategories of variables were listed within the appropriate category.

Computer assisted data analysis was done using the Statistical Package for the Social Sciences (SPSS-X).

Reliability and Validity

Validity and reliability related to the qualitative methodologies used in the study are reviewed here, specifically validity of the qualitative data collection methods, reliability of the qualitative Delphi procedure, and the predictive validity of these qualitative techniques. Validity and reliability related to specific instruments have been addressed in the referent section.

The validity of the knowledge and ability variables that resulted from the interviews and Delphi procedures is based on the "reality of the situation that was being studied" (Stern 1985, 150). Since the dimensions of productivity were

derived from the data (supplied by practicing nurse managers), they are considered valid, as they represent the views of persons directly involved in the productivity management process. Hutchinson (1983) suggested that such a conceptual framework of dimensions "is inherently relevant to the world from which it emerges..." (3).

The next step in the process, surveying nurse managers to determine the importance of each knowledge and ability variable, offered another form of validation for the knowledge and abilities.

The reliability of the knowledge and ability dimensions was established by asking respondents who participated in the study to evaluate the findings. Techniques based on Stern's work (1985) in grounded theory development were used: Delphi participants in round II and III were asked to evaluate whether the list of dimensions "fit a description of productivity"; participants in Delphi II were asked to delete, emphasize, and change the comprehensive list as necessary; and in Delphi III they were asked to evaluate what they thought of the items that were grouped as most important, had been combined, etc. In other words, the "participants in the study serve as the most reliable judges of their reality of the situation under study. They are the real experts" (150-51).

In qualitative research, once the items or core variables have been discovered as a process, the process lasts and "should be able to predict processes in similar situations." In other words, once the knowledge and ability

variables have been discovered as a process that describes productivity, the process should have predictive value in similar situations. "The dimensions remain constant even though the actors and the context change." Once such a set of dimensions "have been discovered in a substantive area, the identified process can be transferred to other contexts to predict what will happen there" (Stein 1985, 151).

CHAPTER IV

RESULTS

Documentation of Knowledge and Ability Variables

Interview and Delphi I Results and Analysis

Table 2 lists the initial 32 variables identified in the first sort and coding of the interview transcripts and Delphi I written responses. Whenever possible the verbatim response from the manager was used. If a particular theme was identified by more than one manager, the verbatim responses from each manager were listed together and a "title" or descriptor for the category was developed, usually by using the most conceptually clear descriptor from among the verbatim responses of the managers. The initial transformation of the data occurred when the taped transcripts and Delphi responses were viewed for distinct categories of knowledge and abilities. The transcripts and Delphi responses were analyzed for the parts included in the transcripts. Data were separated out and viewed in combination with the other variables mentioned by other managers.

This initial sort focused on knowledge and abilities; themes that related to personal characteristics (friendly, mature, cooperative spirit, high energy, quick learner, high confidence level) were eliminated, as were items on efficiency of

TABLE 2

FIRST TRANSFORMATION: KNOWLEDGE AND ABILITIES OF PRODUCTIVE RNS

1. Foundation in formulating nursing diagnosis and measurable goals for client care
2. Background in principles of teaching/learning for client/family
3. Knowledge of nutrition and nutrition teaching
4. Basic understanding of case management principles
5. Complete understanding of rules and regulations governing home care

6a. Strong technical expertise

6b. Able to identify own areas of need for knowledge and skill and obtain same

7. Understands physical processes of illness and associated complications and how it relates to client
8. Demonstrates empathy and concern for the needs of the elderly
9. Views client in wholistic manner
10. Completes paperwork tasks to consistently meet Medicare and agency requirements and deadlines
11. Deals in realistic and practical ways with situations confronting clients (versus focusing on ideal and developing inappropriate plans for clients)
12. Does not force own values on client and family OR non-judgmental in care of clients
13. Recognizes and deals with family concerns related to the client's health problem
14. During visits gives time to psychosocial as well as physical care
15. Visit activities that are planned and implemented are congruent with established goals

Table 2 cont.

16. Provides clear direction to clients during visits

17. Encourages client and family independence (rather than creating dependence)

18. Demonstrates use of limit setting with clients

19. Able to set priorities and deal with high priority problems first

20. Delegates office tasks to support personnel

21. Able to quickly analyze a situation and to develop an appropriate plan

22. Expert in health assessment skills

23. Very organized in their approach to time and tasks

24. Good independent decision making skills

25. Able to adjust daily client schedule if unexpected problems occur with a particular client

26. Good interpersonal communication skills with client and family

27. Easy working relationship with physicians in the community

28. Self starter and able to influence others

29. Will contact supervisor to appraise of clinical situation and issues before they become "problems"

30. Able to be a "marketing person" for the agency wherever they are

31. Identifies and appropriately uses referrals to other disciplines and community resources

32. Understands the structure of the organization

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the nurse, formal educational preparation (e.g., public health certificate, etc.), and descriptions of how the nurse's day should be structured (time in office, time of day-to-day paperwork). Interestingly, descriptors of nurse efficiency (n = 9) included the following range: "sees minimum six visits (not high tech) per day," "exceeds agency standards of number of visits...," "40-45 minute visit and five to seven per average eight hour workday," "visits five to six patients daily with one to two new admissions included," "balances larger than average caseload and associated paperwork," "manages daily caseload of five to six patients (n = 4)."

The second transformation of the data set occurred after consultation with the two nurse administrators and the expert in survey research. The list of knowledge and ability variables was refined for use in the national survey instrument to determine relative importance of each item. Changes to the list included splitting items that reflected more than one distinct theme, removing or changing descriptor words that reflected absolutes, replacing the term "patient" with "client" to reflect the community based relationship between provider and consumer of health care, and removing those items that appeared to either describe other categories or reflected an area that was not conceptually clear.

"Knowledge and foundation in formulating nursing diagnosis and measurable goals for client care" was split to reflect two distinct themes. "Background in teaching/learning for client/family" was included as described by the manager. "Nutrition education" was included as identified by the nurse

manager, however the concept seemed overly specific in relation to others. "Case management principles" was removed from the list because the definitions and descriptions were neither conceptually clear nor distinct. "Complete understanding of rules and regulations governing home health care" was clarified to read "understanding of **all** rules and regulations"....to capture the focus of completeness reflected in managers' comments.

"Strong technical expertise" was refined to reflect the "hands on" focus found in the managers' comments and to include the variety of practice areas that a home health nurse may encounter. The item "ability to sharpen technical and cognitive skills," originally sorted as a sub-dimension of technical competence, was separated and split into updating knowledge and updating technical skills. The use of research literature and other resources was seen as a descriptor of the method for updating knowledge, therefore it was removed in the final written form of the variable. "Knowledge of physical processes and how it relates to the client" was split into two items to reflect the two distinct themes, one related to knowledge of physical/disease processes, the other related to **applying** these in the care of clients. There was a strong suggestion by managers that productive nurses gained this knowledge and ability from some amount of past experience as a nurse in an acute care facility.

"Empathy for the elderly" was reworded to increase clarity. Note that this was suggested by only one of the 20 interview/Delphi respondents, an interesting

finding in light of the assumed heavy Medicare clientele in the majority of these agencies. Perhaps the skill was considered to be so obvious an ability of productive RNs as to avoid specific mention by managers.

"Viewing the client in a wholistic manner" was reworded for increased clarity. "Knowledge and skill in accurately completing paperwork tasks" was identified by many managers. Comments included the need to be organized, complete, concise, accurate, and timely. The initial coding included both payor and agency paperwork requirements, however the final item was divided to reflect the two different foci.

The variable "deals in realistic and practical ways with situations confronting clients" was a theme that came through often in the interviews and on the Delphi responses. The ability to focus on the "reality" in a client situation was stressed by managers; they identified a nurse who could see what could actually ("realistically") be achieved in a particular client/family situation and who dealt with these situations in practical ways. The nurse who developed inappropriate plans for clients, based only on the ideal situation, was seen as one who continually had difficulties in establishing completion and goal achievement in the client situation, thereby causing frustration for both the client/family unit and the nurse. This inability to hone in on the realistic needs in a situation, to accurately assess a situation, was considered one of the major problems of nurses who otherwise had appropriate home care technical knowledge and skills.

In initial transformation of the date, "limit setting with clients" (initially variable 18) was placed as a separate variable, however in secondary review with the panel of experts this item was identified as an example of how the broader variable was implemented with clients.

The theme of RN values clarification, and non-judgmental work with clients was described as "does not force own values on client and family." Managers identified both the need for clarification of the RN's own values about certain diseases/conditions (AIDS, poverty, etc.) and the ability to remain non-judgmental when caring for clients.

The item focusing on family concerns, and the item "providing both psychosocial and physical care" were clear and distinct in content understanding and context; with minor changes to increase clarity, both were left in the form taken from verbatim responses from the managers.

The variable "visit activities are planned and implemented based on treatment goals for the client" reflected the theme of planning and goal oriented visits. Managers identified the productivity nurse as one who knew prior to the visit what was to be achieved during **that** visit, and focused on those activities during the visit time. The nurse they described "had the big picture," so to speak, and was able to fit the individual visit activities and client outcomes into the broader treatment plans. The nurse was described as one who was able to conceptualize and implement the incremental steps needed to achieve the client

treatment outcome. In contrast, the less productive RN saw the "things to be done" during the visit, but failed to recognize and evaluate the activities of the visit as incremental steps in the nurse's plan to assist the client's progress toward better health, comfortable death, etc.

The initial coding of the variables "provides clear direction to clients during visits," "encourages client/family independence," and "the ability to deal with problems in priority order" were assessed as conceptually distinct and listed as separate items. "Delegating office tasks to support services" was listed as is on the pilot survey, however comments from the pilot survey group prompted a change to read "delegates non-nurse tasks..."

The "ability to analyze a situation and develop an appropriate plan" represented a theme that was recurring in the transcripts of the interviews. Managers described the ability to "clue into a potential problem before it occurs," using "good problem solving skills." The descriptor "quickly" was removed, since the focus of the item was on appropriate analysis (a later variable focused on timely management).

Managers described skill in health assessment and used terminology including "physical assessment skills," and "expert assessment skills." Managers referred to nurses with "expert" assessment skills and tended to describe those skills in similar ways, therefore the descriptor remained with the item.

Good organizational skills and time management skills were woven throughout the descriptions given for productive RNs, as well as being identified as separate items. Organization of work and timely management of work were identified, for this study, as one item. For example, one nurse manager indicated that an organized nurse without good time management skills would not be considered productive. Various scenarios of this same theme were described in the transcripts. The managers offered numerous descriptors for this variable, and often used the words "organized" and "proceed in timely manner" in the same sentence when explaining the variable.

"Independent decision making skills" was best described by managers as "attuned to and comfortable with independent decision making" or "able to make independent decisions and not labor over it." The initial coding of this variable remained stable and was used in the survey.

"Flexibility in adjusting the client schedule," although perhaps related to organizational ability, was distinctively identified in the transcripts and therefore coded as a separate variable.

Communication skills with clients and physicians were identified and coded as distinct items. Communication with client/family was described by managers as "an active listener," "able to communicate at client's level"; communication with physician stressed the activities involved in working with another health professional: staying in contact, etc.

Interestingly, communication with colleagues/peers was not mentioned as a knowledge/ability describing productive RNs. Also of note, the ability of the RN to function in informal and formal coordination of services among care providers was not identified, save the mention of "knowledge of case management principles."

The item "self starter and able to influence others" was initially coded, however, when viewing the context in which the statement was reported, it was considered a description of a personality characteristic and therefore omitted from the list of knowledge/ability variables.

The variable "keeps supervisor informed of major changes in clients" was rewritten by the researcher to increase item clarity. In describing the RN, managers tended to focus on the nurse who was "comfortable" enough to keep the supervisor informed of potential problems and issues that indicated major changes in client well being. During the interviews, several of the managers seemed to be "hunting for words" to illustrate this concept. Other managers identified no special skills among the more productive nurses in communicating or responding to supervision. Perhaps the responses elicited from this question reflect the supervisor's style of management, so much so that in some cases the question became threatening, when the focus was perceived to be on manager role versus staff nurse function.

The item "able to be a 'marketing person' for the agency" reflected the view that productive nurses presented a professional image of the agency to those they come in contact with. The item was included on the survey as transcribed from the Delphi questionnaire.

In the initial sort, the "identification and appropriate use of agency referrals and community resources" was coded as one item. The item was reviewed and split into two to provide conceptual clarity. The final item related to "structure of the agency" was reworded to improve clarity.

The final list consisted of 35 knowledge and ability variables (Table 3). The initial coding of the variables into similar areas organized around 32 categories. In initial analysis, these 32 categories "fit" broader themes related to knowledge, and skills and abilities (known in this study as abilities). Knowledge areas were either client-centered (influencing client outcomes) or work role centered (output). Skills and abilities were either client-centered (influencing client outcomes) or agency goal related (output). A third sub-dimension of abilities related to agency maintenance, namely functioning as a marketing person, and understanding the structure of the organization. This general classification scheme was conceptually helpful in sorting these raw data, but was of little assistance in analyzing the second configuration of data used in the Registered Nurse Productivity Survey.

TABLE 3

KNOWLEDGE AND ABILITIES OF PRODUCTIVE RNS:
RESULTS OF INTERVIEW AND DELPHI I ANALYSIS

1. Foundation in formulating nursing diagnoses
2. Foundation in formulating measurable goals for client care
3. Background in principles of teaching/learning for client/family
4. Knowledge of nutrition teaching
5. Understanding of all rules and regulations governing home care
6. Hands on technical skills in their area of practice
7. Able to update technical skills as needed
8. Able to update knowledge of unfamiliar diseases and conditions
9. Understands physical processes of illness and associated complications
10. Understands how physical processes and complications of illness relate to client
11. Demonstrates empathy for the elderly
12. Views client as part of a family and community
13. Completes paperwork tasks to meet Medicare requirements and deadlines
14. Completes paperwork tasks to meet agency requirements and deadlines
15. Deals in realistic and practical ways with situations confronting clients
16. Does not force own values on client and family
17. Recognizes and deals with family concerns related to the client's health problem
18. During visits gives time to both psychosocial and physical care

Table 3 cont.

19. Activities are planned and implemented based on treatment goals for the client
20. Provides clear direction to clients during visits
21. Encourages client and family independence when necessary
22. Able to deal with problems in priority order
23. Delegates office tasks to support personnel
24. Able to analyze a situation and develop an appropriate plan
25. Expert in health assessment skills
26. Organized in their approach to time and tasks
27. Able to make independent decisions
28. Able to adjust daily client schedule if unexpected problems occur
29. Good interpersonal communication skills with client and family
30. Good working relationship with physicians in the community
31. Keeps supervisor informed of major changes in clients
32. Able to be a "marketing person" for the agency
33. Uses referrals to other agency services when appropriate
34. Uses community resources for meeting client needs when appropriate
35. Understands the structure of the agency in which they work

Importance of Knowledge and Ability Variables

Survey Results and Analysis

Sample Characteristics

Table 4 summarizes the sample characteristics. The respondents had a mean age of 42.1 years, 98 percent were female, and 96 percent Caucasian. Highest educational level of respondents ranged from an Associate Degree in Nursing (10 percent) to doctorally prepared (.3 percent). Sixty-nine percent of the respondents had completed a baccalaureate degree or higher.

Respondents' mean years of RN supervision in the current agency equalled 4.78 (sd = 5.34). Seventy four percent had between six months and 6 years of experience in the current agency. Several agencies had recently opened and the respondent therefore had a limited tenure with the agency; none of the nurse managers had less than six months experience in their current position. The mean total years of supervision of RNs during their nursing career was 8.4 (sd = 6.97). Fifty percent of the respondents had between six months and eight years of total supervisory experience. Of these, half (25 percent of the total sample) had between four and eight years of experience.

The respondent sample represented 17 percent governmental agencies, 23 percent hospital based, 25 percent proprietary, and 35 percent VNA agencies. The agency sample consisted of 85 percent with a majority of visits not Medicare hospice services, and 15 percent with a majority of visits in this category.

TABLE 4

DEMOGRAPHIC DATA ON NURSE MANAGERS

Age: range 25 - 65 years old; mean 42.1 years

Gender: female 98%

Race: Caucasian 96%
Black, Hispanic, other 4%

Supervision in current agency: range .5 - 42 years; mean 4.78 yrs; sd = 5.34

Total supervision experience: range .5 - 42 years; mean 8.40; sd = 6.97

Educational Preparation: range from associate degree to doctorally prepared

Highest Educational Preparation:

Associate Degree in Nursing	10.4 percent
Diploma in Nursing	21.0
Bachelor's Degree in Nursing	40.0
Non-nursing Bachelor's Degree	9.6
Master's Degree in Nursing	12.5
Non-nursing Master's Degree	6.2
Doctoral Degree	
Total Percent	100.0

Total number of visits done annually (Table 5) ranged from 700 to 700,000, with a mean annual visit number of 22,002 (sd = 50,605). These findings should be interpreted with caution, however, since 23 percent of the respondents failed to complete this item. There may have been confusion over the type of visit information requested: whether just nursing visits, Medicare visits, and/or total visits by all disciplines and all payors. Also, first line nurse managers may not have ready access to the total annual visit totals.

TABLE 5

TOTAL NUMBER OF ANNUAL VISITS
(N=259)

Annual Visits	**Percent**
700 - 4,999	28.6
5,000 - 9,999	19.7
10,000 - 25,999	31.2
26,000 - 999,999	17.0
100,000 - 700,000	3.5
Total Percent	100

The major payer source for visits was Medicare (84 percent), followed by Medicaid (9 percent), third party payers (3 percent) and other sources (Health

Maintenance Organizations, grants, 4 percent). The majority of agencies (63 percent) employed only salaried staff on a full and/or part time, 30 percent had both contract and salaried staff, and 7 percent employed only contract staff.

Importance of Knowledge and Ability Variables

Median scores on the 35 knowledge and skill variables were analyzed to determine the nurse managers' perception of each item's relative importance for productivity in their agency and setting (Table 6). Scores ranged from one to seven on a seven point scale, with seven indicating greater importance. The majority of respondents selected a six or seven on the scale for each item, indicating that the item is considered to be important to very important. Median scores on the items ranged from 5.0 to 7.0. Variables number four (nutrition teaching) and number 32 (able to be a "marketing person" for the agency) were the only items with median scores of 5.0.

There was no significant difference in median scores for 94 percent of the items when compared on the basis of whether hospice services comprised a majority of annual visits (Appendix B-1). However, median scores for two of the 35 variables showed significant differences between the two groups (Table 7). Agencies with a majority of hospice visits ranked the "ability to update knowledge of unfamiliar diseases and conditions" and "good working relationship with physicians in the community" as more important in their agency and setting

TABLE 6

MEDIAN SCORES FOR KNOWLEDGE AND ABILITY VARIABLES
FOR ALL AGENCY TYPES COMBINED
(N=337)

	Variable	Median	Range of response on 7 point scale
1.	foundation in formulating nursing diagnoses	6.0	1.0 - 7.0
2.	foundation in formulating measurable goals for client care	6.0	2.0 - 7.0
3.	background in principles of teaching/ learning for client/family	6.0	3.0 - 7.0
4.	knowledge of nutrition teaching	5.0	2.0 - 7.0
5.	understanding of all rules and regulations governing home care	6.0	1.0 - 7.0
6.	hands on technical skills in their area of practice	7.0	3.0 - 7.0
7.	able to update technical skills as needed	7.0	3.0 - 7.0
8.	able to update knowledge of unfamiliar diseases and conditions	7.0	4.0 - 7.0

Table 6.--cont.

Variable	Median	Range of response on 7 point scale
9. understands physical processes of illness and associated complications	7.0	4.0 - 7.0
10. understands how physical processes and complications of illness relate to client	7.0	2.0 - 7.0
11. demonstrates empathy for the elderly	7.0	1.0 - 7.0
12. views client as part of a family and community	7.0	1.0 - 7.0
13. completes paperwork tasks to meet Medicare requirements and deadlines	7.0	3.0 - 7.0
14. completes paperwork tasks to meet agency requirements and deadlines	6.0	3.0 - 7.0
15. deals in realistic and practical ways with situations confronting clients	6.0	4.0 - 7.0
16. does not force own values on client and family	7.0	1.0 - 7.0
17. recognizes and deals with family concerns related to the client's health problems	6.0	3.0 - 7.0

Table 6.--cont.

Variable	Median	Range of response on 7 point scale
18. during visits gives time to both psychosocial and physical care	6.0	4.0 - 7.0
19. activities are planned and implemented based on treatment goals for the client	6.0	3.0 - 7.0
20. provides clear direction to clients during visits	7.0	3.0 - 7.0
21. encourages client and family independence when necessary	7.0	4.0 - 7.0
22. able to deal with problems in priority order	7.0	3.0 - 7.0
23. delegates non-nurse tasks to support personnel	6.0	2.0 - 7.0
24. able to analyze a situation and develop an appropriate plan	7.0	4.0 - 7.0
25. expert in health assessment skills	6.0	1.0 - 7.0
26. organized in their approach to time and tasks	6.0	3.0 - 7.0
27. able to make independent decisions	7.0	4.0 - 7.0

Table 6.--cont.

Variable	Median	Range of response on 7 point scale
28. able to adjust daily client schedule if unexpected problems occur	7.0	2.0 - 7.0
29. good interpersonal communication skills with client and family	7.0	4.0 - 7.0
30. good working relationship with physicians in the community	6.0	2.0 - 7.0
31. keeps supervisor informed of major changes in clients	6.0	3.0 - 7.0
32. able to be a "marketing person" for the agency	5.0	1.0 - 7.0
33. uses referrals to other agency services when appropriate	6.0	1.0 - 7.0
34. uses community resources for meeting client needs when appropriate	6.0	1.0 - 7.0
35. understands the structure of the agency in which they work	6.0	2.0 - 7.0

(alpha coefficient = .9431; all items contributed to the alpha score)

TABLE 7

VARIABLES WITH SIGNIFICANT DIFFERENCE IN MEDIAN SCORES BETWEEN AGENCIES WITH/WITHOUT MAJORITY OF MEDICARE HOSPICE VISITS

variable	Median Score: Agencies with Hospice	Non Hospice	Mann-Whitney U	P
#8 able to update knowledge of unfamiliar disease & conditions	7.0	6.0	5798.5	.03
#30 good working relationship w/MDs in community	7.0	6.0	5843.5	.04

(p sign. at $\leq$ 0.05)

than did agencies without a majority of hospice visits. This finding may be explained by the unique and changing technological treatment modalities, and multi-disciplinary team approach to Medicare hospice care that may be unique to agencies providing a majority of hospice visits. However, with such limited data any interpretation should be viewed with caution.

In 94 percent of the cases there were no significant difference between the importance of the variable for hospice and non hospice groups, therefore the two groups were combined into one sample population for the statistical analysis that follows.

Variables were ranked in order of importance from 1 to 5 and written in on the survey instrument by the respondents. As seen in Table 8, the ability to maintain expertise in performance of health assessment was of primary importance to managers. Responses that were coded in this area included comments related to a combination of physical, social, and environmental assessment as well as the statement "health assessment." Clearly the priority is on developing and maintaining an accurate assessment of the client and hands on technical skills.

Five variables, including health assessment skills, knowledge of physical processes and hands on skills, skill in independent decision making, and knowledge of home care rules/regulations accounted for 53 percent of the responses.

Note that selected items appear in several of the rankings, reflecting both the (1) overall importance of the item and (2) the difficulty in separating, ranking and determining relative value among the specific individual items. In writing their choices, many respondents combined two or more items into one

TABLE 8

KNOWLEDGE AND ABILITY VARIABLES RANKED 1-5 IN IMPORTANCE FOR ALL AGENCY TYPES COMBINED (N=337)

variable		percent
[RANK 1]		
25	expert health assessment skills	26.5
6	hands on technical skills	12.6
27	able to make independent decisions	5.5
5	understanding of all rules and regulations governing home care	4.3
9	understands physical processes of illness and associated complications	3.7
Percent of Total		52.6
[RANK 2]		
6	hands on technical skills	12.9
25	expert health assessment skills	8.9
3	background in principles of teaching/ learning for client/family	7.4
39	(combination variable): communication with staff physicians, clients	6.4
26	organized in their approach to time and tasks	6.1

Table 8 cont.

variable		percent
24	able to analyze a situation and develop an appropriate plan	4.9
5	understanding of all rules and regulations governing home care	4.0
29	good interpersonal communication skills with client and family	4.0
38	(combination variable): completion of Medicare and agency paperwork	4.0
Percent of Total		58.6
[RANK 3]		
6	hands on technical skills	9.9
26	organized in their approach to time and tasks	7.7
27	able to make independent decisions	6.5
38	(combination variable): completion of Medicare and agency paperwork	5.9
39	(combination variable): communication with staff, physicians, clients	5.6
3	background in principles of teaching/ learning for client/family	4.9
5	understanding of all rules and regulations governing home care	4.9
25	expert in health assessment skills	4.0

Table 8 cont.

variable		percent
36	(Combination variable): foundation in formulating nursing diagnoses and measurable goals for client care	3.4
Percent of Total		49.4
[RANK 4]		
39	(combination variable): communication with staff, physicians, clients	9.7
38	(combination variable): completion of Medicare and agency paperwork	8.2
3	background in principles of teaching/ learning for client/family	7.2
27	able to make independent decisions	6.6
5	understanding of all rules and regulations governing home care	6.0
26	organized in their approach to time and tasks	5.0
6	hands on technical skills	4.7
15	deals in realistic and practical ways with situations confronting clients	3.4
25	expert in health assessment	3.4
Percent of Total		54.2

Table 8 cont.

variable		percent
[RANK 5]		
38	(combination variable): completing of Medicare and agency paperwork	12.0
27	able to make independent decisions	6.5
26	organized in their approach to time and tasks	5.5
5	understanding of all rules and regulations governing home care	4.9
28	able to adjust client schedule if unexpected problems occur	4.9
34	uses community resources for meeting client needs when appropriate	4.9
39	(combination variable): communication with staff, physicians, clients	4.9
3	background in principles of teaching/ learning for client/family	3.9
13	completes paperwork to meet Medicare requirements and deadlines	3.9
30	good working relationship with MDs in the community	3.6
Percent of Total		55.0

rank. In coding the responses, the item mentioned first was coded highest, etc. When items could not be conceptually separated into two, and when it became apparent that like combinations of variables were occurring frequently, additional categories (each assigned a numeric label) were added to reflect these "combination variables."

When combining the 1 and 2 rankings (Table 9) the primary importance of "health assessment" and "hands on technical skills" is maintained. Only three of the eleven variables in this combined list were identified both in the first and second rankings (variables 5, 6, 25). This configuration also reflects the importance of variables related to independent decision making, organization, teaching/learning principles and communication, and the requisite knowledge of home care rules and regulations.

Comments from survey respondents expressed the difficulty in ranking the variables. Comments included "I would rank these all as prerequisites to productivity," "it was very difficult to rank these 1 to 5 - they're ALL important." Therefore, in order to view and analyze the several variables that rank among the five most important, variable responses ranked 1 through 5 were combined and tabulated (Table 10). (Appendix B-2 lists the variables numerically with frequency of mention in ranking 1 through 5).

TABLE 9

COMBINED 1-2 RANKINGS OF IMPORTANT KNOWLEDGE AND ABILITY VARIABLES FOR ALL AGENCY TYPES COMBINED

Variable	Percent
25 expert health assessment skills	35.4
6 hands on technical skill	25.5
27 able to make independent decisions	9.2
26 organized in their approach to time and tasks	8.9
3 background in principles of teaching/ learning for client/family	8.6
39 (combination variable): communication with staff, physicians, clients	8.6
5 understanding of all rules and regulations governing home care	8.3
24 able to analyze a situation and develop an appropriate plan	8.3
9 understands how physical processes and complications of illness relate to client	7.1
29 good interpersonal communication skills with client and family	5.8
38 (combination variable): completion of Medicare and agency paperwork	4.0

TABLE 10

RANK AND PERCENT FREQUENCY FOR
KNOWLEDGE AND ABILITY VARIABLES IN 1-5 RANKINGS COMBINED,

ALL AGENCY TYPES COMBINED

rank	var.	percent	variable name
1	25	43.8	Expert in health assessment skills.
2	6	42.0	Hands on technical skills in their area of practice.
3	38	31.0	(Combination variable): completes paperwork to meet Medicare and agency requirements and guidelines.
4	27	28.8	Able to make independent decisions.
5	39	28.8	(combination variable): good interpersonal communication skills with staff, physicians, and client/families
6	26	27.1	Organized in their approach to time and tasks.
7	3	24.6	Background in principles of teaching/learning for client/family.
8	5	24.1	Understanding of all rules and regulations governing home care.
9	24	14.9	Able to analyze a situation and develop an appropriate plan.
10	29	14.1	Good interpersonal communication skills with client and family.
11	9	13.6	Understands physical processes of illness and associated complications.

Table 10 cont.

rank	var.	percent	variable name
12	28	13.5	Able to adjust daily client schedule if unexpected problems occur.
13	22	12.5	Able to deal with problems in priority order.
14	13	11.0	Completes paperwork tasks to meet Medicare requirements and deadlines.
15	10	10.3	Understands how physical processes and complications of illness relate to client.
16	34	9.5	Uses community resources for meeting client needs when appropriate.
17	15	9.0	Deals in realistic and practical ways with situations confronting clients.
18	36	8.9	(Combination variable): formulate nursing diagnoses and goals
19	19	8.6	Activities are planned and implemented based on treatment goals for the client.
20	30	7.3	Good working relationship with physicians in the community.
21	12	6.5	Views client as part of a family and community.
22	18	5.9	During visits gives time to both psychosocial and physical care.
23	7	5.6	Able to update technical skills as needed.
24	14	5.1	Completes paperwork tasks to meet agency requirements and deadlines.
25	2	4.3	Foundation in formulating measurable goals for client care.
26	1	4.3	Foundation in formulating nursing diagnoses.
27	11	4.3	Demonstrates empathy for the elderly.

Table 10 cont.

rank	var.	percent	variable name
28	20	4.0	Provides clear direction to clients during visits.
29	21	4.0	Encourages client and family independence.
30	31	3.7	Keeps supervisor informed of major changes in clients.
31	16	3.4	Does not force own values on client and family.
32	37	2.8	(Combination): update technical skill and knowledge of disease conditions
33	17	2.1	Recognizes and deals with family concerns related to the client's health problem.
34	32	1.9	Able to be a "marketing person" for the agency.
35	8	1.6	Able to update knowledge of unfamiliar diseases and conditions.
36	33	1.5	Uses referrals to other agency services when appropriate.
37	23	0.9	Delegates non-nurse tasks to support personnel.
38	35	0.6	Understands the structure of the agency in which they work.
39	4	0.4	Knowledge of nutrition teaching.

All 35 original variables were represented to some degree among those considered the five most important, with from 0.3 to 44 percent of respondents identifying the knowledge or ability as among the most important. Fifteen of the items were mentioned by at least 10 percent of the respondents.

The major grouping of variables (eight of 38 variables) was identified among the five most important by between 24 to 44 percent of the respondents. It appears that assessment and hands on technical skills, skill in home health care paperwork requirements and rules and regulations, teaching/learning principles and communication provide the background or framework for independent decision making and an organized approach to clinical practice.

The next cluster of variables was judged among the five most important by between 10 to 15 percent of respondents. Communication with client and family (a component of variable 39) and facility with Medicare paperwork (a component of variable 38 listed above) were both identified, as were the ability to analyze and develop appropriate plans (variable 24), understand physical conditions and relate these to the client (variable 9 and 10), flexibility (variable 28), and the ability to prioritize (variable 22). These variables have the appearance of functioning as descriptors of the eight variables identified most often.

Variables listed at the lower end of the ranking may be assumed to be other than the five most important knowledge and abilities of productive nurses. The question can then be posed: Should these variables be discounted as less relevant to productivity? Perhaps, rather than discounting these variables, they should be viewed as the knowledge and abilities that provide the discrimination

among productivity levels. To illustrate: one must achieve a certain level of performance skill and intellectual ability within the discipline to be proficient. This proficiency may be evidenced by mastering the higher ranked knowledge and ability variables discussed earlier. Even higher levels of proficiency or sophistication in performance, e.g. productivity, may be achieved when other knowledge and abilities become part of the RN's practice. In this case, skills related to direct care of clients, and some variables related to organization/agency maintenance (understanding agency structure, delegating non-nurse tasks, functioning as a "marketing person" for the agency) may represent the variables that tend to increase proficiency and thus, productive performance.

Interestingly, these lower ranked knowledge and abilities may be considered by nurse managers to be less relevant, in that these items are not a part of the major job function of the RN. For instance, "referring to other agency disciplines" (variable 33) may not represent a major job function of the RN (related to productive function), particularly if the organization structure provides that another RN admit clients and establish referrals. The variable "knowledge of nutrition teaching" may be too specific for inclusion in such a variable list. The Delphi II and survey results were reviewed to determine whether there was support for this view.

Delphi II Results and Analysis

Eleven of 12 questionnaires were returned, of these 10 were valid and able to be analyzed. One questionnaire arrived after the completion of analysis and was not able to be used.

In response to the general question regarding whether the description of knowledge and abilities was comprehensive, seven (70 percent) of the panelists specifically stated that they agreed that the list of knowledge and ability variables was a comprehensive description; the other three (30 percent) made no comment. This question also asked panelists to identify "aspects that you would add, expand, de-emphasize, or delete." These data were analyzed for insights that might have utility in establishing predictive validity of the productivity profile and are presented in a later section.

Knowledge and ability variables were ranked 1 to 5 by the Delphi panelists (table 11). Variables ranked first in importance reflect both analytic and technical skills in assessment of health and analytic skill in developing appropriate plans for client situations. When viewing those items ranked second in importance, the focus is again on analytic, intellectual skills (independent decision making, the ability to analyze a situation and develop a plan, and the ability to prioritize) and an understanding and updating of knowledge of physical processes and conditions. In listing variables third in importance, 60 percent of

TABLE 11

KNOWLEDGE AND ABILITY VARIABLES RANKED 1-5 IN IMPORTANCE BY DELPHI II PANELISTS

variable	percent
[RANK 1]	
25 expert health assessment skills	40
26 organized in approach to time and tasks	20
24 able to analyze situations and develop an appropriate plan	20
1 foundation in formulating nursing diagnoses	10
3 background in principles of teaching/learning for client/family	10
Percent	100
[RANK 2]	
27 able to made independent decisions	30
24 able to analyze a situation and develop an appropriate plan	20
9 understands physical processes and associated complications	20
8 able to update knowledge of unfamiliar diseases and conditions	10
22 able to deal with problems in priority order	10
32 able to be a "marketing person" for the agency	10
Percent	100
[RANK 3]	
10 understands how physical processes and complications of illness relate to client	20
9 understands physical processes of illness and associated complications	20
2 foundation in formulating measurable goals for client care	10

Table 11 cont.

6 hands on technical skill	10
7 able to update technical skills as needed	10
12 views client as part of a family and community	10
26 organized in their approach to time and tasks	10
38 (combination variable): completion of Medicare and agency paperwork	10
Total	100
[RANK 4]	
5 understanding of all rules and regulations governing home care	20
6 hands on technical skills	10
10 understands how physical processes and complications of illness relate to client	10
14 completes paperwork tasks to meet agency requirements and deadlines	10
19 activities planned and implemented based on treatment goals for the client	10
20 provides clear direction to clients during visits	10
22 able to deal with problems in priority order	10
24 able to analyze a situation and develop an appropriate plan	10
26 organized in their approach to time and tasks	10
Percent	100
[RANK 5]	
22 able to deal with problems in priority order	20
3 background in principles of teaching/learning for client/families	10
5 understanding of all rules and regulations governing home care	10

Table 11 cont.

10 understands how physical processes and complications of illness relate to client	10
38 (combination variable): completes Medicare and agency paperwork	10
15 deals in realistic and practical ways with situations confronting client	10
20 provides clear direction to clients during visits	10
23 delegates non-nurse tasks to support personnel	10
26 organized in approach to time and tasks	10
Percent	100

the panelists listed knowledge and abilities related to physical processes and care of the client. Other responses included organizational skills, completing paperwork, and viewing the client as part of the family and larger community.

In the fourth ranking, 50 percent of the variables related to knowledge of home care rules and paperwork, and knowledge and skill in physical care of the client. The other 50 percent can be classified as analytic abilities related to delivering and managing the care: planning, analyzing, organizing, and prioritizing.

As would be expected, there was a wide range of variables ranked fifth in importance by the panelists; seven of the nine variables were also mentioned in

the 1 to 4 ranking. The two variables not previously identified were "deals in realistic ways with client situations" and "provides clear direction to clients."

When combining the variables ranked first and second in importance (table 12), both assessment skills and the ability to appropriately analyze and plan reflect equal importance.

After the first and second ranking, the judgments of the panelists became less similar in ranking individual variables. Two of the panelists expressed the difficulty in ranking the variables, since "all were important." Therefore, all knowledge and ability variables listed 1 to 5 were combined for review in toto. Table 13 reflects the importance of the combination of analytic abilities and knowledge and skill in physical care. Organization and analyzing and planning each were identified by 50 percent of panelists; 40 percent listed knowledge of physical conditions and health assessment skills. Thirty percent of panelists identified independent decision making among the most important abilities, equal to knowledge of home care rules and regulations. Skill in completing paperwork, knowledge of teaching/learning principles, hands on technical skills and providing clear direction to clients during visits were identified by 20 percent of the panelists.

A productive RN, from the panelists perspective, would have good organization and time management skills, and be able to prioritize problems,

TABLE 12

COMBINED 1-2 RANKINGS OF IMPORTANT KNOWLEDGE AND ABILITY VARIABLES BY DELPHI II PANELISTS

	variable	percent
25	expert health assessment skills	40
24	able to analyze a situation and develop an appropriate plan	40
27	able to make independent decisions	30
26	organized in approach to time and tasks	20
9	understands physical processes and associated complications	20
1	foundation in formulating nursing diagnoses	10
3	background in principles of teaching/learning for client/family	10
8	able to update knowledge of unfamiliar diseases and conditions	10
22	able to deal with problems in priority order	10

TABLE 13

COMBINED PERCENT FREQUENCY FOR KNOWLEDGE AND ABILITY VARIABLES IN 1-5 RANKING BY DELPHI II PANELISTS

variable	percent
organized in their approach to time and tasks	50
able to analyze a situation and develop an appropriate plan	50
able to deal with problems in priority order	40
expert in health assessment	40
understands how physical processes and complications of illness relate to client	40
understands physical processes and associated complications	40
able to make independent decisions	30
understanding of rules and regulations governing home care	30
provides clear direction to clients during visits	20
hands on technical skills	20
background in principles of teaching/learning	20
(combination variable): completes paperwork tasks to meet Medicare and agency requirements and deadlines	20

analyze a situation and develop an appropriate plan. Skills in health assessment must be expert and the nurse would be able to apply knowledge of physical processes and complications of illness to the client, and provide hands on care. The nurse's practice would reflect a clear understanding of home health care rules and regulations, and she would be able to make independent decisions in the management of client care. A background in teaching/learning principles would assist in providing clear direction to clients and families. The nurse's organizational skills would be reflected in the effective documentation of client needs and provision of care (services) to meet agency and Medicare requirements and deadlines.

This profile offers insight into the strength of intellectual skills necessary in maintaining productivity. Also, this profile appears to reflect variables similar to those identified by the survey respondents, although the degree of agreement on the importance of selected variables varied between the two groups.

Associations Between Variables: Survey Results

Tau C correlations between the variables were analyzed to determine significant associations between individual variables. There were 195 significant correlations (P = .000) with Tau C equal to or higher than .30, 85 significant associations with the Tau C statistic equal to or higher than .35, and 45

significant associations with the Tau C statistic equal to or greater than .40. The original seven by seven contingency table matrix was reduced to a three by three matrix to employ the chi square test for statistical significance. In the original matrices, cell sizes in the first four categories of the scale (1, 2, 3, 4) were insufficient for accurate interpretation of chi square, therefore an initial reduction was done to condense the scale and combine cell frequencies in categories one, two, three, and four.

The four point scale and subsequent matrices still offered cell frequencies less than 5 in over 40 percent of the contingency tables (degrees of freedom were greater than one). Therefore the survey response scale (1 to 7) was further reduced to combine values in categories one through five, resulting in a three point scale. The heavy distribution of responses in categories six and seven suggested that most variables were considered "more important," and the survey responses in the one through five categories appeared to reflect the perception of less important variables. The transformation to the three point scale retained the broad categories of less important, medium importance, and more important variables. Since condensing the scale (and thereby increasing some of the frequencies in the contingency table) tended to increase the likelihood of gaining statistical significance (Henkel 1976), only Tau C values of equal or greater than .40 were reviewed and analyzed (Appendix B-3).

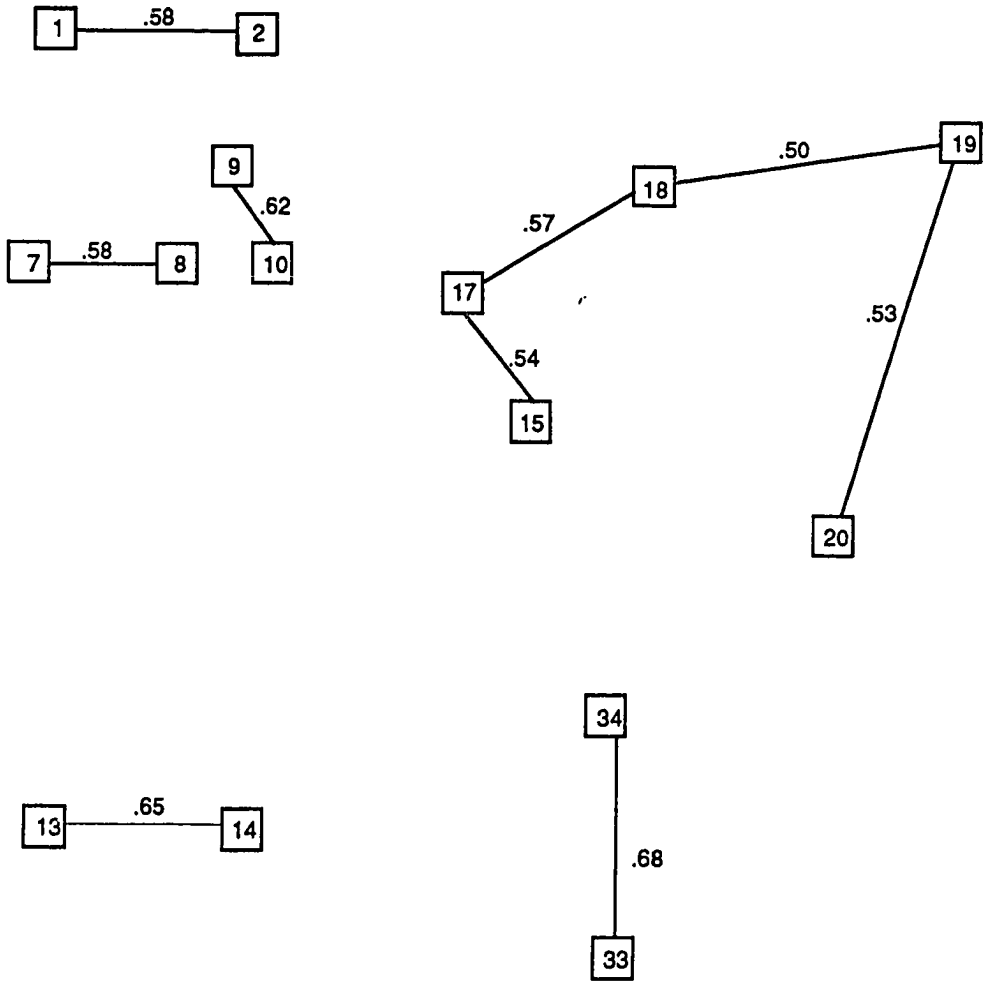
There is a strong association (Tau C = .50 to .68, p = .000) between several distinct sets of variables: (1) the two items related to nursing process, variables 1 and 2; (2) the ability to update knowledge/abilities, variables 7 and 8; (3) understanding physical conditions related to client, variables 9 and 10; (4) several skills directly related to client care, variables 15, 17, 18, 19, and 20; (5) completion of paperwork tasks, variables 13 and 14; and (6) the use of referral system resources, variables 33 and 34 (Figure 3).

Past comments from Delphi panelists validate this moderately strong relationship between nursing diagnosis and measurable goals (Tau C = .58, p = .000).

There is a moderately strong relationship (Tau C = .58, p = .000) between variables 7 and 8, updating knowledge as well as skills; between variables 9 and 10, understanding and applying knowledge of physical conditions and complications (Tau C=.62, p=.000); between variables 33 and 34, use of agency and community referral systems (Tau C=.68, p=.000); and between variables 13 and 14, completion of paperwork (Tau C=.65, p=.000). Survey respondents, when writing in and ranking the five most important knowledge and abilities, identified these combinations of variables more often than either of the component individual variables.

Figure 3

Schema of Tau C Associations ≥ .50



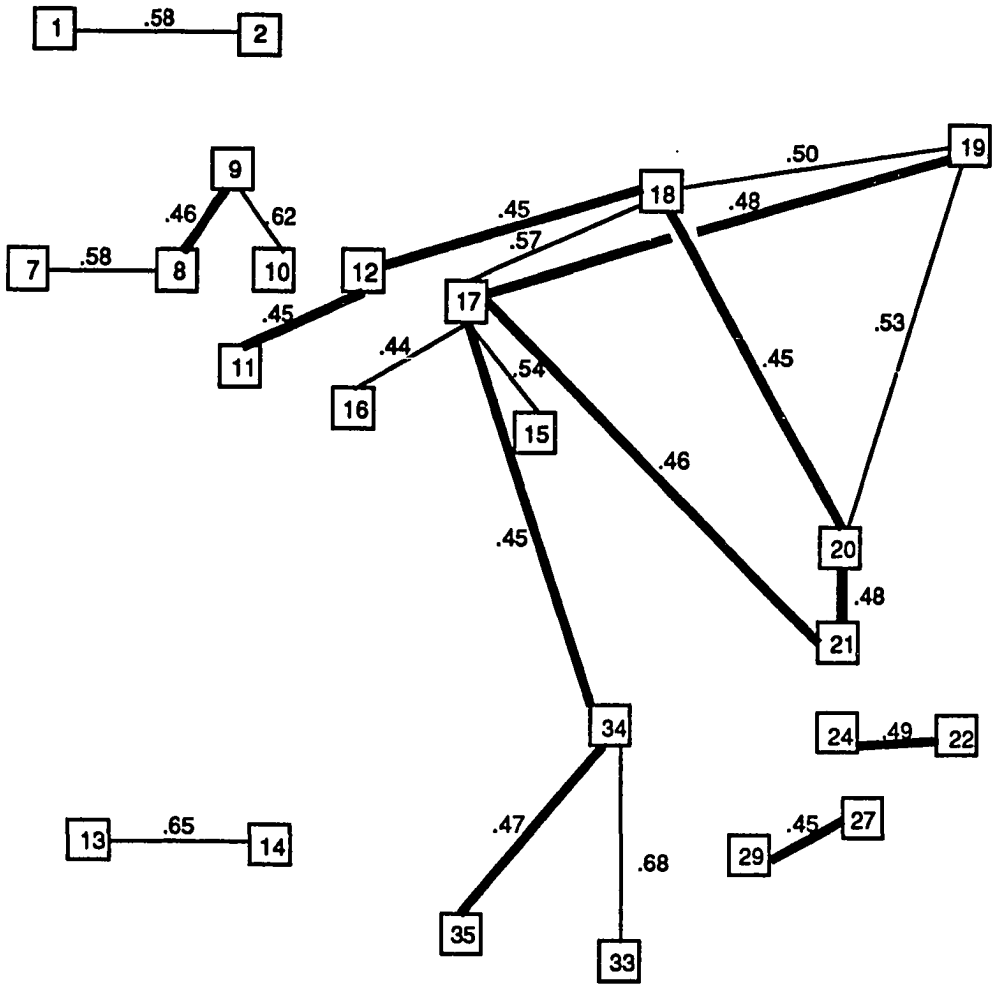
The cluster of variables related to client-centered activities included dealing with "family concerns" (variable 17), giving time to "both psychosocial and physical care" (variable 18), "planning and implementing activities based on client treatment goals" (variable 19), and "providing clear direction to clients" (variable 20). Based on this clustering of client-centered variables, it would seem reasonable to anticipate the inclusion of variable 12 ("view client as part of family/community") and variable 21 ("encourages client/family independence when necessary").

When expanding the schema to include significant ($p = .000$) Tau C values greater than or equal to .45, these client-focused variables do appear (Figure 4). In addition to variables related to direct care activities, knowledge and abilities that provide the framework/background for implementing care in the home also have moderately high associations with the original set of variables. Perhaps these sets of data can be organized within a framework of concentric circles, with direct client-centered activities at the core, and knowledge and abilities needed to implement the direct care surrounding the core activities.

Note the triad of variables 8, 9, and 10. This combination of knowledge and ability relates to maintaining and updating knowledge of physical conditions of illness/complications as they relate to the client. Variable 10 is the result of proficiency in variables 8 and 9.

Figure 4

Schema of Tau C Associations ≥ .45



"Empathy for the elderly" (variable 11) and "viewing client in a wholistic manner" (variable 12) conceptually relate, and share a moderately strong statistical association as well (Tau C = .45).

There is an association of moderate strength between variable 22 and variable 24 (Tau C = .49). Conceptually the two relate: "dealing with problems in priority order" may be one of several dimensions of "analyzing a situation and developing an appropriate plan." There is also a moderately strong association between variables 27 and 28 (Tau C = .45); perhaps, similar to earlier associations, variable 28 ("ability to adapt to changes") is a descriptor of the construct related to independent decision making (variable 27).

Variable 12 ("views client as part of a family and community") shows significant association with variable 18; perhaps variable 12 as well as variable 10 are requisite knowledge and professional values necessary for skill in determining when and how to provide both psychosocial and physical care as needed (variable 18).

Variable 17 ("recognizes and deals with family concerns") shows a moderately strong association with three additional variables, use of referrals (variable 34), encouraging client independence (variable 21) and variable 19, "activities are based on treatment goals." Are these knowledge and abilities somehow necessary for effectively dealing with family concerns related to the

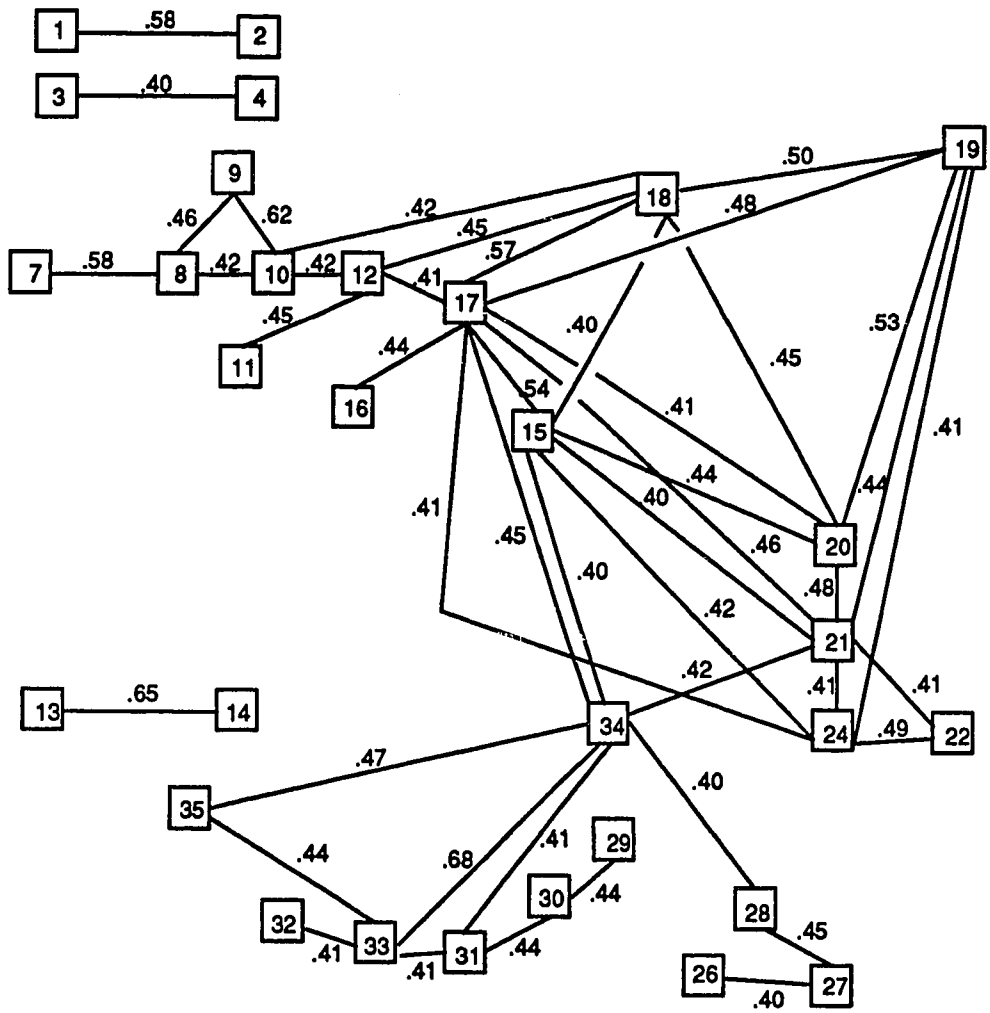
client's health problems? Conceptually, it seems logical, however interpretation of this productivity schema, which is based solely on Tau C associations, precludes the suggestion of directional relationships between variables. However, the association relationship between individual variables is significant and does substantiate covariance.

When Tau C associations between .40 and .449 were added to the schema (Figure 5), the interaction of the client-centered variables and the intellectual abilities used in clinical practice becomes apparent. Variable 22, "ability to deal with problems in priority order," and variable 24, "ability to analyze a situation and develop an appropriate plan," show moderately strong association with variables dealing with client/families (deal with situation in realistic ways, variable 15, encourage independence, variable 21, and plans based on treatment goals, variable 19).

In summary, the association between variables support the following clusters: foundation in nursing process skills (variables 1, 2), ability to maintain and apply knowledge of physical conditions to the client situation (variables 7, 8, 9, 10), application of community nursing skills when working with clients/families (variables 11, 12, 15, 17, 18, 19, 20, 21, 22, 24, and 34) and a yet untitled set of relationships that involve variables that each associate with the use of referral systems, (i.e., knowledge of agency structure, skill in communication with

Figure 5

Schema of Tau C Associations ≥ .40



physicians and supervisor, able to adjust to changes in client situation, and able to be a "marketing person" for the agency). These skills/abilities reflect current community health practice and reflect work role and agency maintenance functions rather than direct client care issues.

It is of conceptual significance that variables ranked by managers in another section of the survey as "most important to productivity," namely health assessment skills, and hands on technical skills, were not strongly associated with others in the grouping, such as analytic ability, etc. At this point in the analysis, these skills appear to "stand alone"; they are necessary for productive performance, but not highly associated with mastery and performance of other skills. Interestingly, associations among these variables did fall in the .30 to .35 range, suggesting a small positive association between assessment and hands on skills and many of the other variables.

Agency Specific Profiles

To determine whether there are profiles of knowledge and abilities unique to each agency type, survey data were separated into the four groups (agencies), and significant differences were analyzed among median scores on each of the 35 variables, and qualitative rankings of variable importance were compared among agencies. Association testing between variables within each agency type (Tau C

and chi square measures) provided no valid information and was not included herein. With four degrees of freedom, approximately 80 percent of the contingency tables violated the assumptions for interpretation of Chi square statistical significance, with greater than 22 percent of expected cell frequencies less than five.

The Kruskal-Wallis test, using a significance level of 0.05, identified no significant difference in median scores among agencies for 33 of the 35 variables. These results strongly suggest that the productivity variables are relatively similar across agency types. Table 14 details the two variables where the relative importance of the variable does vary significantly among agency types. Although all agencies view "the ability to analyze a situation and develop an appropriate plan" (variable 24) as important, the VNA agency respondents identified a significantly higher level of importance associated with this variable than did other agency types. VNA and governmental agencies were relatively close in mean rank, as were hospital and proprietary agencies. Of the four groups, the proprietary agency respondents placed less importance on the variable than the other agency types.

Traditionally, VNAs have dealt with the spectrum of health, disease prevention, and illness. RNs in these settings have historically worked with relative independence and are oriented toward flexibility and assessing the

TABLE 14

VARIABLES WITH A SIGNIFICANT DIFFERENCE IN RELATIVE IMPORTANCE MEDIAN SCORES AMONG THE FOUR AGENCY TYPES

Variable 24: able to analyze a situation and develop an appropriate plan

Gov't	Hosp	Prop	VNA	Kruskal-Wallis Chi Square (corrected for ties)	P Value
	median score (mean rank)				
7.0	7.0	6.0	7.0	8.269	.0408
(173.22)	(156.13)	(152.04)	(183.22)		

Variable 33: uses referrals to other agency services when appropriate

6.0	6.0	6.0	6.0	8.071	.0446
(173.28)	(162.18)	(144.66)	(181.23)		

($p \leq 0.05$)

"reality" of the client situation. This ability to "make do with what the situation presents," to work with the reality of a situation when developing a plan, may be more important for RNs working in VNA agencies than in the other three types.

Proprietary agencies and hospital based agencies, on the other hand, have developed with a focus on a more select market (illness care), and perhaps more structured organizational controls. Therefore the expectation to "analyze a situation and develop a plan" may be more narrowly interpreted than in the VNA.

VNA respondents also place a higher level of importance on the "use of referrals to other agency services" (variable 33) than do respondents of the other three agency types. There appears to be decreasing importance placed on the use of agency referrals as one moved from VNAs, to governmental, hospital based, and then to proprietary agencies. Reasons for this may include (1) the strong philosophy within VNAs and governmental agencies to use a multi-disciplinary approach, coupled with physician referral sources who view these services as assistive to the basic therapies, (2) the proprietary management structure which may place referral coordination with someone other than the staff RN more frequently than other agency types, (3) the clientele may differ among proprietary, hospital based, governmental, and VNA agencies in their need for referral services, and/or (4) there may be more referral services within

the VNA, governmental, and hospital based agencies, than within the proprietary sector.

Data profiles that rank the five most important variables from each of the four agency types reflect the similarities among the perceptions of agency respondents. Table 15 combines variables ranked 1 to 5 within each agency type, and presents each item's frequency of mention within the group of five most important knowledge and abilities. Variables that are included as important by greater than 20 percent of respondents within each agency type include "skill in health assessment" (variable 25) and "hands on technical skill" (variable 6), "ability to make independent decisions" (variable 27), "teaching/ learning principles" (variable 3), organizational skills (variable 26), "knowledge of home care rules and regulations" (variable 5), and documentation requirements (variable 38).

Interestingly, the "ability to analyze a situation and develop a plan" (variable 24) was ranked either ninth or tenth by respondents of hospital based, proprietary, and VNA, but only ranked 22nd (5.6 percent) by governmental agencies. Although governmental agency respondents placed higher value than other agencies on the relative degree of importance of the ability when completing the seven point "relative-importance" scale (median score 7.0; Table

TABLE 15

COMPARISON OF MOST IMPORTANT KNOWLEDGE AND ABILITY VARIABLES AMONG AGENCY TYPES

Rank	Agency			
	Gov't	Hosp	Prop	VNA
	var %	var %	var %	var %
1	**6** (47)	**25** (47)	**25** (43)	**6** (50)
2	**25** (43)	**27** (32)	**6** (38)	**25** (39)
3	**39** (38)	**6** (32)	**27** (32)	**38** (37)
4	**27** (32)	**3** (28)	**38** (32)	**26** (31)
5	**26** (25)	**38** (26)	**5** (26)	**5** (24)
6	**38** (24)	**26** (26)	**26** (25)	**3** (23)
7	**3** (23)	**39** (25)	**3** (23)	**27** (22)
8	**5** (21)	**5** (24)	**28** (16)	**39** (20)
9	**28** (15)	**9** (22)	**24** (13)	**24** (18)
10	**29** (15)	**24** (17)	**29** (11)	**22** (17)
11	**10** (15)	**29** (16)	**30** (11)	**9** (12)

Key to Variables:
#3: knowledge of teaching/learning principles
#5: knowledge of HHC rules & regs
#6: hands on technical skills
#9: understands physical conditions/complications
#22: deals w/ problems in priority
#24: able to analyze situation and develop plan
#25: skill in health assessment
#26: organizational skills
#27: independent decision-making
#28: adjust client schedule as needed
#29: communication w/ clients
#38: (combination): documentation requirements
#39: (combination): communication w/ clients/physicians

14), apparently other variables were more important when ranking variables in 1to 5 order.

Perhaps the governmental agency respondent group view the "ability to analyze a situation and develop an appropriate plan" as a descriptor of the variable focusing on flexibility, "able to adjust daily client schedule if unexpected problems occur" (variable 28) which was ranked ninth, or the variable "good interpersonal skills..." (variables 39 and 29) which was ranked third and tenth. The nature of RN practice in the governmental agency, perhaps including both illness and wellness services, may focus on communication skills which are broadly defined to include skills in "analyzing a situation and developing a plan" while communicating with clients, agency and community contacts (variables 39 and 29).

Overall, respondents from the four agency types rank knowledge and ability variables of productive RN practice in a similar fashion. There is surprising consistency in regard to the most important knowledge and abilities. These knowledge and abilities appear to cross agency organizational affiliation in the population of agencies that are Medicare certified.

Determination of Underlying Constructs Among Variables

A factor analysis was done on the data in aggregate form to determine the existence of constructs that might unite the set of variables or explore a system of classification by reducing the 35 variable set to a lesser number of conceptual factors. A seven factor solution converged after 14 iterations and accounted for 61 percent of the variance in the total measure. Table 16 reflects the factor pattern and loadings for the knowledge and skill variables. The average loadings for the seven factors were .53, .51, .55, .67, .80, .86, and .55, for factor one to seven. All of the variables loaded on one or more of the factors; twenty seven of the variables primarily loaded on only one factor.

Nine variables loaded on Factor 1 and relate to knowledge and abilities in client and family management. This construct, Client/family Management, tends to be supported by previously reported Tau C associations between several of these variables. (see page 115).

Factor 2, titled Practice Management, is a dimension that encompasses those skills and abilities that relate to the RN's ability to organize, make independent decisions, and analyze a situation and develop plans. Interestingly, "expert in health assessment skills" loaded on two factors, neither of which stress maintenance of skills. Note that the seven factors accounted for over 53 percent of the variance in this variable.

TABLE 16

SEVEN FACTOR SOLUTION PATTERN, FACTOR LOADINGS AND COMMUNALITIES FOR KNOWLEDGE AND ABILITY VARIABLES

Factor	Variable Title	Loading	Communalities
Factor 1	Client/Family Management		
17	deals w/ family concerns	.71	.68
18	time to psychosocial/physical care	.70	.62
12	views client as part of fam/comm.	.67	.59
21	encourages client/family independence (secondary loading Factor 2 .43)	.61	.63
11	empathy for the elderly	.60	.54
20	provides clear direction to client (secondary loading Factor 2 .40)	.56	.60
16	does not force values on cl/fam	.55	.42
15	deals in realistic/practical ways with client situations (secondary loading Factor 2 .40)	.54	.56
19	activities plan/implemented based on treatment goals	.54	.59
Factor 2	Practice Management		
24	able to analyze & develop a plan (secondary loading Factor 1 .47)	.53	.59
27	able to make independent decisions	.66	.57
26	organized in approach to time/tasks	.66	.62
22	able to deal w/ problems in priority	.65	.57
28	adjust client schedule if problems occur (secondary loading Factor 3 .45)	.58	.59
25	expert in health assessment skills (secondary loading Factor 7 .42)	.44	.53
23	delegates non-nurse tasks	.40	.49

Table 16 cont.

Factor	Variable Title	Loading	Communalities
Factor 3	Communication		
30	good working relationships w/ MD	.64	.51
32	able to be "marketing person"	.63	.50
33	uses agency referrals as needed	.59	.59
34	uses community referrals as needed	.59	.68
31	keeps supervisor informed	.59	.56
35	understands agency structure	.46	.51
29	good communication w/ client/fam	.43	.43
Factor 4	Knowledge/Skill Maintenance		
7	update technical skills as needed	.79	.74
8	update knowledge disease/conditions	.73	.71
9	understands physical processes illness/ complications	.64	.66
6	hands on technical skills	.62	.54
10	understands how physical processes relate to client (secondary loading Factor 1 .48)	.56	.66
Factor 5	Nursing Process		
1	formulating nursing diagnoses	.81	.69
2	formulating measurable goals	.79	.74
Factor 6	Written Documentation		
14	completes Medicare paperwork to meet requirements/deadlines	.87	.85
13	completes agency paperwork to meet requirements/deadlines	.85	.82
Factor 7	Home Health Care Knowledge		
5	understands rules/regs governing HHC	.69	.62
3	background in teaching/learning principles (secondary loading Factor 5 .44)	.56	.63
4	knowledge of nutrition teaching	.53	.55

When viewed in the context of Practice Management, the ability to be proficient in health assessment skills is a tool useful in managing the provision of services to clients. Health assessment has been viewed as a precursor to effective decision making related to client needs and goals. Skill in health assessment has been reported in an earlier section of this study as important to productivity; these factor analysis data suggest that this variable be included among variables within the construct of practice management.

The construct identified in Factor 3, titled Communication, includes communication variables both internal and external to the agency and involve client, staff, supervisor, and community resources. Both "marketing skill" (variable 32) and "knowledge of the agency structure" (variable 35) load on this factor.

Five variables that reflect updating and maintaining knowledge and abilities load on Factor 4. Both the ability to update knowledge and the ability to provide hands on technical skills (ranked as one of the most important variables by survey respondents) are included.

Factor 5, titled Nursing Process, is composed of two primary variables, formulating nursing diagnoses and formulating measurable goals for client care, and a shared variable ("teaching/learning principles") that primarily loaded on Factor 7, with secondary loading on this factor. Earlier Tau C analysis of

association between variables one and two and verbatim statements from interviewees support the conceptual significance of this distinct construct.

Factor 6, Written Documentation, includes the two variables "completes paperwork tasks to meet Medicare..." and agency requirements and deadlines. This construct is further validated by the survey results, where respondents tended to rank these two variables as one.

Factor 7 was the last factor identified, and is not as theoretically distinct as the others. This construct includes the three variables that represent knowledge acquisition in the areas of (1) teaching/learning principles, (2) nutrition teaching, and (3) rules and regulations governing home health care. Perhaps the underlying construct relates to the teaching function of the RN, about nutrition, about the nature of home care regulations. However, the validity of a construct inclusive of these specific teaching functions is not clearly supported by information obtained from interviews, Delphi procedures, or survey results.

However, managers in home health care have emphasized the knowledge of rules and regulations governing home health care - what services can be provided to clients and families, what services are reimbursed - and a construct reflecting this area appears conceptually valid. Teaching/learning principles may be more appropriately identified with Factor 5, Nursing Process, however primary loading occurred on this factor. Variable 4, "knowledge of nutrition teaching," may not

fit any of the constructs; this variable may be too specific for inclusion within this profile. Factor 7 is titled "Home Health Care Knowledge," and knowledge of rules and regulations governing home health care appears to be the primary variable within this construct.

To summarize, there appear to be seven constructs that represent major classifications of productivity measurement for home health care nurses. These include: Client/Family Management, Practice Management, Communication, Knowledge/Skill Maintenance, Nursing Process, Written Documentation, and Home Health Care Knowledge. These constructs are supported by interview and Delphi panelists' statements that relate certain variables to one another. The knowledge and abilities of the productive RN appear to cluster into distinct categories that reflect both direct and indirect client services, and include hands on skills, intellectual and problem solving skills. In addition, knowledge and skill in understanding the system of care in which they work, e.g. knowledge of rules and regulations and facility with paperwork requirements, is consistently documented as important to productivity. This is a likely reflection of the paperwork requirement of the home health care reimbursement system, a retrospective per visit payment system laden with documentation requirements, recertification for service delivery, etc.

The validity of the individual variables that comprise the seven constructs have been determined through multiple techniques: initial development of the range of variables occurred during interviews and the Delphi I procedure, the value and importance of each variable and the initial development of combinations and clusters of variables was achieved during survey and Delphi II analyses.

The variables considered by survey respondents to be among the five most important to productive clinical practice include assessment and hands on technical skills (variables 25 and 6), skill in home health care paperwork requirements and rules and regulations (variables 38 and 5), teaching/learning principles (variable 3) and communication (variable 39), independent decision making (variable 27), and an organized approach (variable 26) to clinical practice.

Delphi II panelists agree to the above and supplement the list to include the ability to prioritize problems (variable 22), analyze a situation and develop an appropriate plan (variable 24), and apply knowledge of physical processes and complications of illness to the client (variables 9 and 10).

Analysis of among group differences indicate that there is limited variability among the four major agency types in defining important productivity knowledge and abilities. Only two of 35 variables ("ability to analyze a situation and

develop a plan," "uses referrals to other agency services") show significant differences among agency types in the relative values (median score) placed on the variable. There is surprising agreement among respondents in all agency types on variables considered important to productivity, indicating that overall there may be similar models of productive nursing practice regardless of agency affiliation.

Development of A Classification of Productivity Measurement

The next step in analysis involves determining what classification of productivity variables has both predictive validity and can be of use to managers in delivering home health care services. This section will review changes and insights offered by Delphi and interview participants and will include their judgments related to (1) combining/deleting variables, and (2) validation of the usefulness of constructs determined by factor analysis.

Delphi III Results and Analysis

Participants in the second Delphi procedure were asked whether the list of 35 variables was comprehensive. There was general agreement with the comprehensiveness of the list; 10 suggestions were offered relative to expanding, deleting, or otherwise changing specific variables. Several of these suggestions

had also come from survey participants' responses to ranking important variables; they offered rationale for combining variables. All of these suggestions were rewritten as questions and presented to the panelists in the Delphi III questionnaire.

Panelists were asked whether "empathy for the elderly" (variable 11) should be changed to "empathy for clients." All panelists agreed with the change, one noting that "while currently our population emphasis is on the elderly, this is not the only population we serve."

There was disagreement over whether to de-emphasize "nutrition teaching" (variable 4) and emphasize a strong overall knowledge base. Seventy two percent of panelists agreed to the de-emphasis, one panelist stating, "a good home care nurse must be well balanced with knowledge of diet, medications, disease processes, and their relationship to the family and patient." The twenty three percent that felt nutrition teaching should remain as stated stressed that many agencies do not have nutritionists, and since the key to many client interventions is nutrition management, the nurse must be able to make accurate decisions concerning actual or potential nutritional deficits. Note that this variable was one of two on the RN Productivity Survey with a median score of 5.0 (range was from 2.0 to 7.0). Although this item contributed to the overall reliability in the instrument, "nutrition teaching" may not be useful as a separate

item in a productivity profile. Nutrition teaching is a specific cognitive area of knowledge, part of the larger "clinical nursing knowledge" expected of home health nurses, and as such may be more useful as a descriptor of another variable rather than as a distinct variable.

There was some disagreement over whether to de-emphasize the variable "delegation of non-nurse tasks to support personnel" (variable 23). Seventy two percent agreed with emphasizing the variable, and suggested that it always was and is within the RN's authority. Comments included, "even nurses have limits and we need to start enforcing them"; "it has to be a basic authority for any RN to delegate non nursing functions and should be defended in job descriptions. If the agency has fostered a TEAM concept, then everyone works together toward the agency goals. Productivity is adversely affected by RNs performing clerical tasks."

When panelists were asked whether to delete the variable "able to be a 'marketing person' for the agency" (variable 32), the response focused on whether "marketing" was a necessary factor in productivity. There was no consensus: 56 percent agreed that the variable should be retained, 18 percent were not sure, and the remaining 36 percent suggested deletion. Interestingly, panelists referred to marketing as "the ability of the nurse to communicate effectively with referring agencies or physicians which can be vital to future

referrals which indeed impacts on productivity," and "doing excellent care, corresponding with families and physicians, discharge planner, etc." These comments reinforce the results of factor analysis, where the cluster of variables loaded on Factor 3 (communication) included marketing, communication with physicians, clients, supervisors, and referral sources.

Survey respondents and Delphi panelists made suggestions to combine several sets of two variables into one more comprehensive item. Survey respondents, in ranking important variables, tended to combine variables in several areas, namely communication, paperwork, nursing process dimensions, and application of disease processes to clients. Selected Delphi II panelists also made similar suggestions. The entire panelist group was queried in the Delphi III questionnaire to determine the group's view of these potential modifications to the variables. The panelists viewed the "combined" variables as realistic in the practice setting, and indicated agreement with combining several sets of two variables.

All of the panelists (100 percent) agreed to the following changes: combine variable 9 and 10 to read "understands physical processes of illness/complications and how this relates to client," and combine variable 13 and 14 to read "completes paperwork tasks to meet Medicare (or other payors) and agency requirements and deadlines." One panelist, responding to combining variable 9

and 10, stated, "I agree with a single process if we consider that staff must possess the higher level of skill." Another panelist, advocating the combination of variable 13 and 14, stated, "the requirements should be consistent; staff need a set of standards to follow that are uniform and as uncomplicated as possible."

Ninety percent of the panelists agreed to combining variable 33 and 34 to read "uses interagency referrals and/or community resources when appropriate." There were no explanatory comments. Eighty one percent agreed with the combined variable "good interpersonal communication skills with client/family, physician in community and staff colleagues," a combination of variable 29 and 30, with the addition of staff colleagues. One dissenter suggested that "having skill in one of these areas does not guarantee the others."

Seventy two percent of the panelists recommended combining variable one and two to read "foundation in formulating nursing diagnoses and measurable goals for client care." A panelist stated "in our agency diagnoses and goals are written together on admission of each client," but another indicated that "these are two different skills." Seventy two percent also recommended combining variable seven and eight to state "able to update technical skills and knowledge of unfamiliar diseases and conditions."

When initially interviewing nurse managers to elicit dimensions of productivity, many of their comments reflected the above combinations of

variables. In developing the survey instrument, attempts were made to separate out "combination variables" and measure only one distinct item per question. However, as indicated by nurse managers in the Delphi III procedure, the theoretical distinctness of these individual abilities is blurred in the practice setting. Practicing managers view these abilities in combination, for instance, the nurse must have skill in the use of the available referral system, be it internal or external to the agency.

There appears to be an integrated cluster of knowledge and abilities that are requisite skills for productivity. This cluster of items is not divisible in the sense that a nurse can be productive if expert in only some of the parts of the cluster. The combination and integration of many skills and knowledge produces the productive RN. Respondents particularly point to the Practice Management skills of organization, independent decision making, etc. Comments by respondents include:

> - the productive RN's knowledge base consists of three factors, (1) a sound clinical basis, (2) expert assessment skills and (3) the basic understanding of case management principles...Her abilities should include organizational skills, flexibility, interpersonal communication skills and finally the ability to prioritize...All of the above aspects are equally important. Although an RN may possess the clinical knowledge, without the aforementioned abilities she cannot be productive. It is the ability to use the sound knowledge base that makes the RN productive.
>
> - productivity depends first on the individual's sense of organization, priority setting, ability to quickly analyze problems, and plan accordingly. Second comes ready expertise with patients' various conditions and needs...Very

> knowledgeable nurses with expertise can still fall below productivity expectations if they don't function in an organized pattern every work day.
>
> - first of all they have a plan in mind. They know what they are going to be doing when they go out (on the home visit)...they know how to do a good assessment...they have a plan in mind on their routine visits...they are flexible, if the patient may not be receptive to teaching that day they try to go on to something else...I guess you could put it down to some basic components - job performance which is experience as well as knowledge, communication both written and oral, the way they deal with people. I think it is basically...the knowledge base and a plan.

To summarize the findings thus far, expert nurse managers have validated that the list of knowledge and abilities identified as characteristic of productive RNs is a comprehensive profile. In addition, these variables cluster into seven major dimensions of productivity. However, is the profile useful in its current form? Which items are most important, and is there a practical way to view these dimensions for day to day management of productivity?

Productivity Measurement Classification

The factor analysis statistical procedure resulted in a conceptually clean reduction in the data set. However, the identification of the seven dimensions of productivity, in and of itself, is of little practical use to managers. If, however, the seven dimensions are used as major categories of productivity measurement, and variables within each major category are used to describe and illustrate the category, the tool may prove beneficial in day to day management.

Which of the seven dimensions are most important for productivity management? Results of this study indicate that variables within five of the seven dimensions are of primary importance, and the other two are of secondary importance.

Which knowledge and abilities within these dimensions are most important? For specific agency types, two variables tend to be viewed with greater importance: namely "the ability to analyze a situation and develop an appropriate plan" (variable 24) and "uses referrals to other agency services when appropriate" (variable 33).

On first review, Delphi panelists and survey respondents appear to differ in their ranking of most important variables. However, when viewing the selected variables as subcategories of the seven factor productivity dimensions, both Delphi and survey respondents selected variables within the Practice Management and Knowledge/Skill Maintenance categories. Note, however, the different foci between the two groups of managers (Table 17).

Delphi panelists placed primary emphasis on organizing, analyzing, prioritizing, skill at health assessment (all Practice Management), and understanding how physical conditions and complications relate to the client (Knowledge/Skill Maintenance). Survey respondents placed primary emphasis on Practice Management and Skill Maintenance also, but selected skill in health

TABLE 17

COMBINED FREQUENCY FOR KNOWLEDGE AND ABILITY VARIABLES RANKED 1-5 FOR DELPHI AND SURVEY RESPONDENTS

Delphi Panelists

variable	**percent**
organized in their approach to time and tasks	50
able to analyze and develop an appropriate plan	50
able to deal with problems in priority order	40
expert health assessment skills	40
understands how physical processes relate to client	40
understands physical processes/complications	40
able to make independent decisions	30
understanding of rules and regs of home care	30
provides clear direction to client	20
hands on technical skills	20
background in teaching/learning	20
(combination variable): completes Medicare and agency paperwork	20

Table 17 cont.

Survey Respondents

median score	variable	percent
7.0	expert health assessment skills	44
7.0	hands on technical skills	42
7.0/6.0	completes Medicare paperwork completes agency paperwork	16
	(combination variable): completes both Medicare and agency paperwork	31
7.0	able to make independent decisions	29
7.0/6.0	interpersonal skills with client/families working relationship with physicians	21
	(combination variable): communication with client/families, physicians	29
6.0	organized in approach to time and tasks	27
6.0	foundation in teaching/learning	25
6.0	understanding of rules and regs governing home care	24
7.0	able to analyze a situation and develop a plan	15
7.0	understands physical processes/complications	14

assessment, without the inclusion of the more purely intellectual abilities (organizational skill was selected by 27 percent). Likewise, hands on technical skill was high on the list for survey respondents; knowledge of how disease conditions relate to the client was more often identified by Delphi panelists.

Delphi panelists tended to stress analytic skills, while survey respondents concentrated on direct care skills. Considering that the Delphi panelists represent preeminent agencies, these results suggest that the intellectual skills may represent the best practices necessary in maintaining productivity. Perhaps, among agencies considered to be "best examples," these intellectual skills (independent decision making, organized in their approach to time and tasks, ability to analyze and plan, and deal with priorities) are requisite to productive practice in more direct care skills.

Using results of factor analysis, "most important knowledge and abilities," and the profile of knowledge and abilities, a Productivity Measurement Classification is presented that reflects the seven categories of productivity measurement and the descriptors (variables) within each category (Table 18). The "most important knowledge and abilities" have been highlighted to indicate their importance within the category.

Several steps were taken to develop the Productivity Measurement Classification. Results of the survey, section one, validated that all of the

TABLE 18

PRODUCTIVITY MEASUREMENT CLASSIFICATION FOR HOME HEALTH CARE REGISTERED NURSES

Practice Management

* Expert in health assessment skills

* Organized in their approach to time and tasks

* Able to analyze a situation and develop a plan

* Able to make independent decisions

* Able to deal with problems in priority order

Able to adjust daily client schedule if unexpected problems occur

Delegates non-nurse tasks to support personnel

Knowledge/Skill Maintenance

* Hands on technical skills in their area of practice

* Understands how physical processes of illness and associated complications relate to the client

Able to update technical skills and knowledge of unfamiliar diseases and conditions

Written Documentation

* Completes paperwork tasks to meet Medicare (and/or other payors) and agency requirements and deadlines

Table 18 cont.

Home Health Care Knowledge

* Understands rules and regulations governing home health care

* Background in principles of teaching/learning for client/family

Knowledge of nutrition teaching (de-emphasize)

Communication

* Good interpersonal communication skills with client/family, staff colleagues, and physicians

Uses referrals to other agency services and community resources to meet client needs when appropriate

Able to be a "marketing person" for the agency

Keeps supervisor informed of major changes in clients

Understands the structure of the agency

Nursing Process

Foundation in formulating nursing diagnoses and measurable goals for client care

Client/Family Management

* Provides clear direction to clients during visits

Deals in realistic and practical ways with client situations

Activities are planned and implemented based on treatment goals for the client

Views client as part of a family and community

Table 18 cont.

Encourages client and family independence when necessary
Demonstrates empathy for the client
Recognizes and deals with family concerns related to the client's health problem
During visits gives time to both psychosocial and physical care
Does not force own values on client and family

original knowledge and ability variables were perceived as important, therefore all were retained in the final classification. The "most important" variables were identified by survey and Delphi participants who ranked the five most important variables. The entire set of variables was classified into seven dimensions and, after combining several variables and de-emphasizing another to enhance practical usefulness, a Productivity Measurement Classification was developed and is proposed for use by nurse managers.

The Productivity Measurement Classification includes components that appear to reach beyond "scientific" rationality and behaviors based on "calculating reason" where the client is objectified (Lundl, Soder and Waerness 1988, 37). Interestingly, these productive behaviors include what Waerness calls the rationality of caring and "focus on the unique rather than the general and

emphasize flexibility and adaptiveness to the situation" (Lundl, Soder and Waerness 1988, 37). As can be seen in the productivity classification, behaviors include skills necessary to organize tasks and provide services that are unique to each client situation.

Note also that there is considerable diversity and complexity in the dimensions. They include not just technical skills, or just good problem solving abilities, or facility with interpersonal and extra-agency communication, but a combination of these skills and abilities.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The productive home care nurse has been described by a Delphi I panelist as follows:

> Our most productive RNs can review their caseload assignment for the day/week and quickly prioritize. They proceed quickly to planning their day/week. ...Visits are goal oriented and the nurse proceeds quickly through necessary tasks. Patients like their attentiveness, compassion, and clear direction provided during the visit. Productive RNs are flexible in organizing their work schedules and assisting colleagues as needed...they also organize their paperwork tasks in such a way to consistently meet Medicare and agency requirements and deadlines...they are knowledgeable and comfortable in their practice of patient care skills. Their technical expertise is highly evident. The organizational approach to each skill is highly practiced and smoothly implemented each time in the home care setting.
>
> A ready knowledge of community resources, support and networking services, and accessibility to these, with ease, is apparent in their daily practice. Very productive nurses often display comfortable and easy working relationship with physicians in the community. They...are successful in obtaining quickly the information and/or orders they need to proceed with their work. Lastly, these nurses generally display a friendly, mature, cooperative spirit and a commitment to the agency and its mission." (Delphi I response #7).

It is clear from this study that there are multiple components to productivity of home health nurses. Through the insights and perceptions of first line nurse managers in home health agencies, the attributes that characterize

productive nurses have been operationalized and include 35 specific knowledge and abilities. These attributes cluster into seven constructs that include Practice Management, Knowledge/Skill Maintenance, Written Documentation, Home Health Care Knowledge, Communication, Nursing Process, and Client/Family Management. This study strongly suggests that some variables are more important than others, namely Practice Management, Knowledge/skill Maintenance, Written Documentation, Home Health Care Knowledge, and Communication. Nursing Process and Client/Family Management, although not identified among the most important knowledge and skills when describing productive nurses, may define the knowledge and abilities that provide discrimination among productivity levels. Knowledge and abilities of the productive RN appear similar among governmental, hospital, proprietary, and VNA agencies, and among both hospice and non-hospice agencies.

The results of this study suggest a comprehensive and valid profile of productivity dimensions for home health nurses that includes direct and indirect care skills, and both psychomotor and intellectual abilities. These attributes and classifying dimensions provide the clarification necessary to reach conceptualization ("some degree of consensus and understanding of a particular area"; Blalock 1982, 11) of productive RN knowledge and behavior in the home health care setting. The dimensions of productive behavior provide a "common language" and assist in understanding the reality of RN productivity. Factorial

validity (multidimensionality) was confirmed in this study of greater than 300 home health care nurse managers.

Significance of Study Findings for Theory Development

These measurements contribute to understanding of the complexity and multidimensional nature of the health services productivity management process. Results of this study document the many dimensions of service skills needed to provide nursing care in a variety of different client situations. The variables reflect the flexibility, decision making skills, ability to organize and hands on skills needed when the "operating core" (Mitzberg 1979) is complex and non routine, and reinforce Blalock's (1982) contention that, in the social sciences and helping professions, operationalizing measurement in a particular area is particularly complex.

This classification of knowledge and abilities provides the basic framework of measurement of nurse inputs in the productivity management process. The classification includes both practice management and client/family management skills that involve multiple intellectual and technical behaviors. The complexity and scope of nurse inputs cannot be overstated.

Because of the many other inputs in a productivity model in health services, it is clear that the simple input-output model for health services productivity management is both inefficient and inaccurate. Results of this study indicate that nurses liaison and interact either directly or indirectly with family,

internal agency and external community resources, and reimbursement sources in achieving output/outcomes. Therefore, it is incongruent to assume that a linear relationship exists between only nurse inputs and work output (not to mention client outcome). Results of this study document both the range of knowledge and abilities of productive nurses and the range of other human and technical resources that comprise inputs in a productivity model.

Interestingly, study results validate and reinforce the inclusion of the client/family unit as a part of inputs in a health services productivity model. When RN productive behaviors focus on direct management of clients/families and the client's involvement and decision making in the health services process, a productivity management model must include reference to client and family influences.

Results of this study identify RN functions (intellectual and technical) that tend to require a participative, versus an autocratic, management style in first line nurse managers and above. These data indirectly suggest the type of management style that may be most effective when viewed within the context of the productivity management process.

This study provides several new insights on the use of the Delphi procedure. The Delphi procedure was used to identify and evaluate important knowledge and abilities of productive nurses as perceived by managers in preeminent agencies. It does appear that the Delphi procedure has utility in

eliciting information on current practices among those who work in preeminent agencies, making it a useful methodology when the goal is to identify "best practices" within the operating core and management structure of preeminent, superlative health organizations or programs.

The methodology used in this study, a Delphi round I consisting of semi-structured (versus open or structured) questions with a round II ranking of variables (instead of Likert type scale agreement ratings), proved useful when attempting to capture the range and relative value of items under study. Semi-structured questions used in Delphi round I elicited sophisticated, comprehensive statements from panelists. This type of initial organizing of the first round question may prove especially useful when investigating complex, abstract areas without clear definition, where the range and depth of responses is important. In addition, the ranking of variables in round II provided an indication of relative value among variables, a benefit not achievable when including the more typical agreement scales (Goodman 1987).

The Delphi procedure appears to be particularly useful in generating ideas in complex areas. Historically, the use of Delphi was as a tool for scientific forecasting (Weaver 1972), however the procedure has gained acceptance in studies that gather opinion and initiate debate. The effectiveness of the procedure in this study suggests that the Delphi may be an effective methodology

in much of human services research, where the context of measurement includes both quantitative and qualitative dimensions.

In this study, the use of both the separate sample Delphi procedure and face to face interviews provided exhaustive data to support the range of variables that characterize productivity nursing practice. The Delphi procedure has typically been reported as the sole study methodology; results of this study suggest that its use in combination with other methodologies adds strength and depth to the validity of the findings.

Results of this study indicate that responses to ranking the importance of variables were similiar for the 12 purposively selected Delphi members and the random sample of 337 managers, with the significant differences attributed to the Delphi panelists "preeminent agency" membership. In policy research where time and resources may at a premium, the use of the Delphi procedure with a carefully selected panel may prove as effective and more efficient than mass randomized surveying.

Significance of Study Findings for Home Health Care Nursing

This classification of knowledge and skill variables provides managers with a ready operationalization of productivity and defines the nurse attributes that should be included as inputs in a nursing productivity model.

This profile and classification may prove useful to managers in the field in determining, maintaining, and developing productive behaviors in home health

nurses. The classification has utility in interviewing potential staff when assessing strengths in the field and areas where training would be desirable. Also, the profile may be used as a tool to identify strengths and training needs of staff during orientation and/or during day to day staff management, and may reduce overall costs of orientation. Having a ready resource that documents and classifies productive behaviors into realistic categories will assist managers to develop strategies that maintain and develop RN staff who provide both efficient and effective nursing care. Since managers will be able to assist RNs to better structure the home visit, this may lead to both improved quality of care and cost efficiency in service delivery.

Implications for Future Research

These measurements contribute to our overall understanding of productivity, in that the classification of dimensions provides a set of guidelines to the operationalization of productivity and enhances the utility of the process in future research activities. While this study has been promising in terms of construct validity and reliability estimation of the total productivity classification, further efforts to validate both the total classification and subscales should be pursued.

This study has attempted to specify the "conceptual end points" (Babbie 1973, 136) of the dimensions of productivity for home care nurses practicing in the field in 1989. Current changes in home health care - changes in medical and information technology, reimbursement systems, and payor documentation

requirements - suggest that home care is in a dynamic and fluid state. In this environment it is prudent to assume that nurse productive behaviors may change. Certainly the core skills that enhance productivity, skill in health assessment, organization, and communication will remain stable. However, over time other abilities may take precedence. Because of the dynamic nature of the home health field, studies are recommended to track the changes in home care and study the subsequent changes in skill requirements for RN staff.

Likewise, given new sets of market conditions and more rapid rates of technological change, gains/loses in productivity of RN staff may not be a reflection of the individual staff but rather the "poor organization of the entire health care system" (Hage 1984, 121). Studies are suggested that search for new organizational forms, new technologies, and various management techniques that could lead to maintaining both efficient and effective nursing service delivery.

It is particularly important to establish what are currently "best practices" in productivity management in home health care nursing. Therefore it is recommended that those agencies and organizational structures that demonstrate "best practices" be identified and studied. As part of this study, 12 such agencies were identified; further study is recommended to identify the "best practices" used by agencies in productivity management.

Further research is also recommended to address both the client complexity mix and organizational forms among the major agency types, particularly within

the governmental sector. "What has gone unrecognized is that the public sector has increasingly dealt with more and more serious tasks that are labor...intensive" (Hage 1984, 124). Can Hage's insight be applied to home health care, where governmental agencies are the "public sector"? Are these agencies (1) responding to changing market conditions and rapid rates of technological change, and (2) if they are responding, in what way has nursing service delivery and/or the organizational structure changed. The classification of productivity dimensions resulting from this study indicates a profile of knowledge and abilities similar among agency types; further study is recommended to determine whether governmental agencies do indeed have different tasks and how they respond to these tasks in service delivery, specifically identifying whether and how nursing staff use specific knowledge and skills to deal with the tasks.

A combination of quantitative and qualitative approaches seems best suited to examine these issues. Methodological approaches might include field work in participant observation and case study, Delphi procedure, indepth interviews, or a combination of approaches, and should include quantification of frequency and importance of the study variables. Studies are recommended that focus on either the individual practitioner, work unit, or agency as the unit of analysis, and maintain the distinction among the units. Subsequent research may focus on more predictive and causal relationships, within one unit of analysis or even between different levels, however this type of theory testing research is

premature without the descriptive and exploratory framework provided by the methods mentioned above.

The results of this study suggest further investigation in several additional areas, including: (1) the relationship between nursing annual visits by the agency and the relative importance of productivity dimensions, (2) validity and reliability of the productivity dimensions with non-Medicare agencies, (3) investigation of specific efficient and effective practices of RNs perceived to be productive, and (4) further validation and reliability testing of the Productivity Measurement Classification for utility in direct comparison measurement of productivity among several RNs.

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APPENDIX A-1

TOTAL NUMBER AND ANNUAL VISIT TOTAL OF MEDICARE CERTIFIED AGENCIES BY TYPE

Agency Type	**Total N***		**Total Annual Visits****	
Government	1007	(18%)	4,188,000	(11%)
Hospital	1473	(26%)	6,215,000	(16%)
Proprietary	1837	(32%)	10,806,000	(27%)
VNA	491	(9%)	10,751,000	(27%)
Subtotal	(4808)			
Other			7,385,000	
Combination Gov't & Voluntary	50			
Rehabilitation Facility	10			
Skilled Nursing Facility	101			
Private not for Profit	719			
Total	5688		39,345,000	

*HCFA, 1989 Medicare Certified Agencies
**NAHC, analysis of 1986 Medicare HHA Cost Report

APPENDIX A-2

INTERVIEW FORMAT AND QUESTIONS GUIDE

Explain Purpose

"This interview is part of a larger study to determine the attributes of productive RNs working in home health care. Productive includes both the efficiency of the work (the amount of work done or completed) and the effectiveness of the work (the quality of the work and its end results)."

Obtain Consent

"As we discussed, the interview will be taped to help me to tabulate the highlights of the many conversations in the most accurate way. Is that still agreeable to you?"

Introduction

"Remember, if you wish to discuss a particular RN, please identify that person by something other than their name, perhaps use 'Nurse A,' for example. So, let me move on, then, to several broad questions that I'd like to ask of you. As a manager of RNs who provide direct service to clients in the home, you know the staff and their abilities well."

Questions

(from broad to more focused questions based on literature review, then finish with a return to a broad question)

"You have RNs with all levels of competence, some better than others, how would you describe the most productive RNs on the staff?"

"What specifically characterizes these RNs from the rest of the staff?"

(if limited response so far, move to)
"Visualize the most productive RN on the staff (FT, PT, or contract); describe their knowledge of nursing care, what stands out as distinctive? what psychomotor skills/tasks are they particularly good at?"

"What about these attributes makes these RNs more productive then others?"

"Which one or more of these attributes/components do you see as most important?"

"What attributes/knowledge/skill/ability would you definitely not expect to see in these staff?

More Focused Questions

"Is there a particular way the productive RN responds to supervision? (if yes, describe)?"

"Is there a particular way the productive RN works with others inside the agency/outside the agency?"

"Is there a particular way the productive RN manages their work during the day/during the week?"

"On the whole, is there a length of time that a RN must be in an agency before they become productive? If so, what is that length of time?"

"On the whole, is there a length of experience in home care that a productive RN has and others do not?"

"On the whole, is there a type of experience(s) in home care that a productive RN has and others do not?"

"On the whole, is there a type of formal educational experience--AD, diploma, BSN--that is seen in the productive RN?"

"Now, after we've gone through these questions, is there anything that seems to you to be important to the productivity of the RN that we haven't touched on?"

Debrief

"Thank you so much for both your time and expertise. You have provided valuable information that should be of great assistance in this study. Your efforts in this interview are part of the larger study and, as discussed earlier, a final report will be available in fall of 1989. I'd be happy to send you a summary."

APPENDIX A-3

DELPHI QUESTIONNAIRE I

Please describe your perceptions of what constitutes a productive RN in your agency. Identify the knowledge and abilities that distinguish the productive RN from other staff. Please give details of any aspects that you think are especially important. Write your reponses directly on this page; you may use the reverse side if necessary.

Please return this to me by Tuesday, March 28th. An addressed envelope is enclosed. It is not necessary to sign this sheet or identify yourself unless you feel that it is desirable to do so. Thank you.

Lazelle E. Benefield
3561 Glen Eden Quay
Virginia Beach, VA 23452

DELPHI QUESTIONNAIRE II

The following knowledge and skill areas of the productive RN have been compiled after studying the response to the first questionnaire:

1. foundation in formulating nursing diagnoses
2. foundation in formulating measurable goals for client care
3. background in principles of teaching/learning for client/family
4. knowledge of nutrition teaching
5. understanding of all rules and regulations governing home care
6. hands on technical skills in their area of practice
7. able to update technical skills as needed
8. able to update knowledge of unfamiliar diseases and conditions
9. understands physical processes of illness and associated complications
10. understands how physical processes and complications of illness relate to client
11. views client as part of a family and community
12. completes paperwork tasks to meet Medicare requirements and deadlines
13. completes paperwork tasks to meet agency requirements and deadlines
14. deals in realisitc and practical ways with situations confronting clients
15. activities are planned and implemented based on treatment goals for the client
16. provides clear direction to clients during visits
17. encourages client and family independence when necessary
18. able to deal with problems in priority orders
19. delegates non-nurse tasks to support personnel
20. able to analyze a situation and develop an appopriate plan
21. expert in health assessment skills
22. organized in their approach to time and tasks
23. able to make independent decisions
24. able to adjust daily client schedule if unexpected problems occur
25. good interpersonal communication skills with client and family
26. good working relationship with physicians in the community
27. keeps supervisor informed of major changes in clients
28. uses referrals to other agency services when appropriate
29. uses community resources for meeting client needs when appropriate
30. understands the structure of the agency in which they work
31. demonstrates empathy for the elderly
32. does not force own values on client and family
33. recognizes and deals with family concerns related to the client's health problem
34. during visits gives time to both psychosocial and physical goals for the client
35. able to be a "marketing person" for the agency

(Note: others have suggested items #31-35; they were not specifically listed on the completed Delphi questionnaires.)

APPENDIX A-4

DELPHI QUESTIONNAIRE II

#1. Do you agree that this is a comprehensive description of the productive RN? Are there any aspects that you would add, expand, deemphasize, or delete?

#2. From the 35 items listed earlier, and any additions you may have made, rank the 5-7 most important knowledge/skill areas of a productive home health RN? (1 indicates greater importance)

Please return this to me by Friday, June 9th. An addressed envelope enclosed. It is not necessary to sign this sheet or identify yourself unless you feel that it is desirable to do so. Thank you.

Lazelle E. Benefield
3561 Glen Eden Quay
Virginia Beach, VA 23452

APPENDIX A-5

DELPHI QUESTIONNAIRE III

Tabulation of your group's views are listed here. Overall, you considered the list of knowledge and skills to be a comprehensive description of the productivie RN. (see attached list #1-35).

The knowledge and skills considered most important by 20% or more of the group are listed below. The % of the group that ranked the item as one of the 5 most important is to the side.

Organized in their approach to time and tasks. (50%)

Able to analyze a situation and develop an appropriate plan. (50%)

Expert in health assessment skills. (40%)

Able to deal with problems in priority order. (40%)

Understands how physical processes and complications of illness relate to client. (40%)

Understands physical processes and associated complications. (40%)

Able to make independent decisions. (30%)

Understanding of rules and regulations governing home care. (30%)

Provides clear direction to clients during visits. (20%)

Hands on technical skills in their areas of practice. (20%)

Background in principles of teaching/learning for client/family. (20%)

(combination of 2 items): Completes paperwork tasks to meet Medicare and agency requirements and deadlines. (20%)

1. Do you agree that these items are among the most important?

   ___yes ___no

   Explain:

2. Is the relative ranking of items appropriate from your point of view? or Would you place some items differently (move some higher, lower, remove)?

3. In addition to several other useful comments that have already been incorporated in the larger study, the following suggestions about the list of 35 items were made by you or another of the Delphi participants. How do you respond to these suggestions?

   -re: # 11 - "change empathy for elderly to empathy for clients (because RNs evaluate and treat patients age 0 to 100 plus)"

   -re: #4 - "deemphasize nutrition teaching (too specific, as productive RN's entire knowledge base needs to be strong)"

   -re: #23 - delegates non-nurse tasks to support personnel: "de-emphasize this as this is not always within the RN's authority to do"

-re: #32 - able to be a "marketing person" for the agency: "delete this as that is not always a necessary factor in productivity"

Should similar items be combined as follows:

combine item 1 and 2: nursing dx and formulating measurable goals

combine item 7 and 8: able to update technical skill and knowledge

combine item 9 and 10: understands physical processes of illness/complications and how this relates to client

combine 13 and 14: completes paperwork to meet Medicare (or other payors) and agency requirements and deadlines

combine 29 and 30: interpersonal communication with client/family and physician in community and staff colleagues

combine 33 and 34: uses interagency referrals and community resources when appropriate

4. What do you or your agency do to facilitate and/or enable this knowledge and behaviors in RNs?

5. As you see it, what are the barriers to developing this knowledge and skills in RNs?

Please return this to me by **Friday, July 21st.** An addressed envelope has been enclosed. As before, it's not necessary to sign this sheet or identify yourself unless you feel that it is desirable to do so.

Lazelle Benefield, MSN, RN
Doctoral Candidate, Old Dominion University
3361 Glen Eden Quay
Virginia Beach, Va 23452
(804) 498-0053

APPENDIX A-6

Registered Nurse Productivity Survey

This study focuses on defining productivity in RNs working in Medicare certified home health agencies. The skills and elements of practice listed below have already been identified by nurse managers as characteristic of the productive RN. Some of the knowledge and skills are less important in your agency than others. Your job is to determine the importance of each of the attributes. **Please return this survey by June 9th.**

Please rank each of these RN knowledge and skill areas as to their **Relative Importance** in Your agency and setting. Circle the number from 1 to 7 that best describes how important each of these is in Your agency.
(1 = less important.....to.....7 = more important)

	less important						more important
1. Foundation in formulating nursing diagnoses	1	2	3	4	5	6	7
2. Foundation in formulating measurable goals for client care	1	2	3	4	5	6	7
3. Background in principles of teaching/ learning for client/family	1	2	3	4	5	6	7
4. Knowledge of nutrition teaching	1	2	3	4	5	6	7
5. Understanding of all rules and regulations governing home care	1	2	3	4	5	6	7
6. Hands on technical skills in their area of practice	1	2	3	4	5	6	7
7. Able to update technical skills as needed	1	2	3	4	5	6	7
8. Able to update knowledge of unfamiliar diseases and conditions	1	2	3	4	5	6	7
9. Understands physical processes of illness and associated complications	1	2	3	4	5	6	7
10. Understands how physical processes and complications of illness relate to client	1	2	3	4	5	6	7
11. Demonstrates empathy for the elderly	1	2	3	4	5	6	7
12. Views client as part of a family and community	1	2	3	4	5	6	7
13. Completes paperwork tasks to meet Medicare requirements and deadlines	1	2	3	4	5	6	7
14. Completes paperwork tasks to meet agency requirements and deadlines	1	2	3	4	5	6	7
15. Deals in realistic and practical ways with situations confronting clients	1	2	3	4	5	6	7
16. Does not force own values on client and family	1	2	3	4	5	6	7
17. Recognizes and deals with family concerns related to the client's health problem	1	2	3	4	5	6	7
18. During visits gives time to both psychosocial and physical care	1	2	3	4	5	6	7
19. Activities are planned and implemented based on treatment goals for the client	1	2	3	4	5	6	7
20. Provides clear direction to clients during visits	1	2	3	4	5	6	7
21. Encourages client and family independence when necessary	1	2	3	4	5	6	7
22. Able to deal with problems in priority order	1	2	3	4	5	6	7
23. Delegates non-nurse tasks to support personnel	1	2	3	4	5	6	7
24. Able to analyze a situation and develop an appropriate plan	1	2	3	4	5	6	7
25. Expert in health assesment skills	1	2	3	4	5	6	7
26. Organized in their approach to time and tasks	1	2	3	4	5	6	7
27. Able to make independent decisions	1	2	3	4	5	6	7
28. Able to adjust daily client schedule if unexpected problems occur	1	2	3	4	5	6	7

	less important						more important
29. Good interpersonal communication skills with client and family	1	2	3	4	5	6	7
30. Good working relationship with physicians in the community	1	2	3	4	5	6	7
31. Keeps supervisor informed of major changes in clients	1	2	3	4	5	6	7
32. Able to be a "marketing person" for the agency	1	2	3	4	5	6	7
33. Uses referrals to other agency services when appropriate	1	2	3	4	5	6	7
34. Uses community resources for meeting client needs when appropriate	1	2	3	4	5	6	7
35. Understands the structure of the agency in which they work	1	2	3	4	5	6	7

List and **Rank** the 5 most important knowledge/skills of a productive home health nurse in **YOUR** agency

- most important:

36. _____

- next in importance:

37. _____

- next in importance:

38. _____

- next in importance:

39. _____

- next in importance:

40. _____

41. Agency Type:
1__State/local Gov't 2__Hosp. Based 3__Proprietary 4__VNA/VNS

42. Total number of visits done annually (approximate):_____

43. Are a majority of your annual visits Medicare Hospice Services: 1__No 2__Yes

44. List the One Major Payor Source for Visits:
1__*Medicare* 2__*Medicaid* 3__*Private Insurances* 4__*other*_____

45. Type of Staff RNs employed by your agency (check one):
1__full and/or part-time salaried
2__pay per visit
3__both salaried AND pay per visit

46. How long have You been providing direct clinical supervision of RNs in This Agency? _____ years

47. During Your Nursing Career, how long have you been directly supervising RNs? _____years

48. What is your educational preparation (check ALL that apply):
1__Associate degree in nursing
2__Diploma in nursing
3__BS in nursing
4__Bachelor's degree in other than nursing
5__MS in nursing
6__Master's degree in other than nursing
7__Other (please list)_____

49. Age at last birthday?_____years

50. Gender: 1__ Female 2__Male

51. Ethnic Background:
1__white
2__black
3__hispanic
4__other (please list)_____

52. COMMENTS AND SUGGESTIONS:_____

Please mail the completed questionnaire in the attached envelope by **June 9th**. Thank you.

Lazelle E. Benefield
Doctoral Candidate, Old Dominion University
3361 Glen Eden Quay, Virginia Beach, VA 23452
(804)-498-0053

APPENDIX A-7

DELPHI PROCEDURE:
INTRODUCTION LETTER TO AGENCY DIRECTOR

Date

Name
Director
Agency Name
Address
City, State, Zip Code

Dear _____:

As a past director of a Medicare-certified home health agency, I have a keen interest in the issue of "what characterizes the productive home health nurse." To pursue that interest, I returned to the university setting and, as a doctoral candidate, am doing research in the area.

I am doing a study designed to develop an index for defining productivity of RN staff that would be suitable for productivity management use. If the skills or elements of productive RN practice can be operationalized, this could assist managers in developing strategies that maintain and develop RN staff who provide both efficient and effective nursing care, perhaps leading to improved quality of care and more cost-efficient methods for structuring the nursing home visit.

To define the components of RN productivity requires recommendations from home health managers and administrators. Your agency participation is requested in the initial phase of this study, which involves a Delphi (3 rounds) survey of first line nurse managers from the major types of home health care agencies. Subsequent steps in the process will include a national survey of managers and case study work with agencies to determine the relevance and usefulness of the productivity dimensions.

Your agency was identified by leaders in the field as being preeminent and therefore you have been selected to participate in the Delphi survey. It is requested that you identify a full-time first line nurse manager who best exemplifies the agency management philosophy and who would be willing to respond to three rounds of semi-structured written questions (each round taking 15 minutes) that request information about the elements or variables that are reflective of the productive RN.

Certainly, the individual manager's responses will be kept confidential and reporting of the responses will be done in group form. There is no need for a signature on the questionnaire unless the nurse manager wishes to do so. This study is sponsored by the School of Business and Public Administration, Old Dominion University, and has been approved by their Institutional Review Board.

I will take the liberty of contacting you in the next several days to confirm your participation and to identify the nurse manager that you recommend. Please contact me at the number above should you have questions prior to my call. Thank you.

Sincerely,

Lazelle E. Benefield, MSN, RN

APPENDIX A-8

DELPHI ROUND I: COVER LETTER TO NURSE MANAGER

March 17, 1989

Name
Address
City, State, Zip Code

Re: Study to Define Productivity in Home Health RNs

Dear _____:

I am pleased that you are participating in this study, the purpose of which is to develop an index for defining productivity of home health RN staff that would be suitable for productivity management use. You are a member of a select group of nurse managers from preeminent agencies across the country who are involved in the Delphi survey (three rounds), which is the initial phase of this study.

The goal of this phase of the study is to identify the skills or elements of practice that characterize the productive home health RN. Subsequent steps in the process will include a national survey of managers and case study work with agencies to determine the relevance and usefulness of the productivity dimensions.

You will find enclosed the first round Delphi survey for your completion and return. The questionnaire is purposefully open-ended so that you have room to specify what you consider to be the knowledge, skills, and abilities that are reflective of the productive RN in your agency--that is, one who is both effective and efficient. Be as open and as detailed as you wish; hand written responses are fine. And as the time management literature states, I hope that you handle this form only once and complete the questionnaire now--so it's off your desk and back to me. Of course, you can guess that I also have some interest in a speedy return.

After you return the completed questionnaire, the information from you and other managers will be compiled as an initial description of productivity components. In the second and third rounds of the Delphi survey this information will be sent back to you with instructions for your critical review and feedback. In others words, you'll have a chance to see what other managers are saying and to give feedback on your views. As was shared with your director, completing each questionnaire should take about 15 minutes, and subsequent questionnaires will be sent to you during April and July.

Certainly, individual responses will be kept confidential and reporting of the responses will be done in group form. The study is sponsored by the School of Business and Public Administration, Old Dominion University, and has been approved by their Institutional Review Board.

As you know, your input will be valuable in developing the initial framework for productivity definition of nurses in home health care. I look forward to working with you and hope that you share my enthusiasm for this endeavor. Please do not hesitate to call me at the number above should you have questions.

Sincerely,

Lazelle E. Benefield, MSN, RN

APPENDIX A-9

DELPHI ROUND II:
COVER LETTER TO NURSE MANAGER

May 31, 1989

Name
Address
City, State, Zip Code

Dear :

I have summarized the results of the first round Delphi survey that you participated in. Many thanks for the thoughtful and "reality based" responses. I received everyone's responses (thanks to everyone for promptness!! - only a couple were very slow to return) and I have organized your responses into a list of knowledge and skills of productive RNs. Note that in some cases I combined like thoughts into one category, therefore, you may not see an idea phrased in the exact wording you used. In most cases I did try to leave the description as was written.

In this second Delphi round you are asked to critique the information gathered from the first round. Please make your views known on the accompanying sheet: Does the description cover all parameters of the productive RN? What should be stressed? What has been omitted? As with the first survey - be as open and detailed as you wish; hand written responses are fine!

This time, after you return the completed questionnaire, the information from you and the other managers will be compiled to identify areas of consensus and change in the list of productivity components. In the third round Delphi survey this information will be sent back to you, with instructions for further refinement and elaboration of categories for usefulness in practice.

Please return the completed questionnaire by Friday, JUNE 9th. Your prompt response to this survey round is again appreciated; I hope I've caught you before vacation time. The last Delphi survey should be sent to you in late June/early July; if I should send the survey to an address other than the office, let me know.

Sincerely,

Lazelle E. Benefield, MSN, RN

APPENDIX A-10

DELPHI ROUND III:
COVER LETTER TO NURSE MANAGER

July 11, 1989

Name
Address
City, State, Zip Code

RE: Delphi Round III - RN Productivity (due Fri, July 21st)

Dear :

The purpose of this final questionnaire is to determine agreement on the knowledge and skills identified by you and your colleagues during the second questionnaire. I ask that you respond to several questions on the following pages that relate to whether you agree/disagree with the ranking of the knowledge/skill variables. If you agree with the variable placement state your reasons for that. Likewise, if you disagree, add comments to defend your views.

As a member of an expert group of nurses you are offering insights about knowledge/skills that, frankly, have not be operationalized before. In other words, now's your chance: your insights will have a direct impact on whether certain knowledge/skill groups are identified as particularly important for productive nurses in home care.

As you may recall, this work is part of a larger study, and data are in the final stage of analysis. Your views will provide the insights and judgements that can only be offered by experts in the field. (Frankly, as a past agency manager, I think your insights are the most important part of this study!)

Your prompt response is necessary so that I can include the results of this last survey in the study, so please return the survey by **Friday, July 21st**. I ask this of you while acknowledging your busy schedule and other commitments. Many thanks! (I'll send results of this last survey so you'll know how this ends up.)

Sincerely,

Lazelle E. Benefield, MSN, RN

APPENDIX A-11

CONTENT OF PRE-SURVEY POSTCARD FOR REGISTERED NURSE PRODUCTIVITY SURVEY

May 31, 1989

Dear Colleague:

In the next several days I will send you a survey that is part of a study to define the knowledge and skills of productive RNs in home health care. Select the NURSE MANAGER IN HOME HEALTH in your agency who best represents the agency's philosophy and PASS THE SURVEY TO THIS RN when it arrives. The survey will take about 10 minutes for them to complete.

If you have questions contact me at the number below. As a past home care manager I can appreciate your busy schedule - many thanks for your participation in a study that should be of direct benefit to all of us in home care.

Lazelle E. Benefield, MSN, RN
Doctoral Candidate, Old Dominion Univ
(804) 498-0053

return address on front:

Lazelle E. Benefield, MSN, RN
Doctoral Candidate, Old Dominion Univ
3361 Glen Eden Quay
Virginia Beach, VA 23452

APPENDIX A-12

SURVEY COVER LETTER FOR
REGISTERED NURSE PRODUCTIVITY SURVEY

June 2, 1989

Name
Address
City, State, Zip Code

Dear Colleague:

As a past director of a Medicare-certified home health agency I have a keen interest in the issue of "what characterizes the productive home health nurse". To pursue that interest I returned to the university setting and, as a doctoral candidate, am doing research in the area.

Your agency has been randomly selected from a list of Medicare-certified agencies to participate in this survey. Please identify the first line nurse manager in home health who best exemplifies your agency's philosophy and PASS THE SURVEY TO THAT RN TO COMPLETE AND TO RETURN TO ME BY JUNE 9th. The survey should take about 10 minutes to complete.

Your agency name is on the survey form so I can follow up if necessary. The individual's responses and agency identity will be kept confidential and reporting of the responses will be done in group form. This study is sponsored by the School of Business and Public Administration, Old Dominion University, Norfolk, VA and has been approved by their Institutional Review Board. Please contact me at the number above should you have questions or comments.

Your input and assistance will be valuable in defining the knowledge and skills of productive RNs in home health care. Many thanks!

Sincerely,

Lazelle E. Benefield, MSN, RN

LEB/bk

APPENDIX A-13

POST-SURVEY REMINDER POSTCARD FOR REGISTERED NURSE PRODUCTIVITY SURVEY

June 12, 1989

RE: REGISTERED NURSE PRODUCTIVITY SURVEY

I haven't received the survey yet, and as a reminder, if you haven't already done so, please pass the survey to the selected RN manager to complete and return to me. Do call me if you need another survey form.

If the survey has been mailed--many thanks to you and the RN who took the time to complete the survey. Your input is valuable and appreciated!

Lazelle E. Benefield, MSN, RN
Doctoral Candidate, Old Dominion University
3361 Glen Eden Quay, Virginia Beach, VA 23452
(804) 498-0053

APPENDIX B-1

MEDIAN SCORES FOR KNOWLEDGE AND ABILITY VARIABLES
FOR AGENCIES WITH/WITHOUT MAJORITY OF
MEDICARE HOSPICE VISITS

	variable	majority of visits Hospice:Median (N=51)	majority of visits non-hospice:Median (N=284)	Mann-Whitney U	P value
1.	foundation in formulating nursing diagnoses	6.0	6.0	6236.5	.17
2.	foundation in formulating measurable goals for client care	6.0	6.0	6215.5	.16
3.	background in principles of teaching/learning for client/family	6.0	6.5	6398.5	.26
4.	knowledge of nutrition teaching	5.5	5.0	6745.0	.61
5.	understanding of all rules and regulations governing home care	6.0	6.0	6783.5	.62
6.	hands on technical skills in their area of practice	7.0	7.0	6377.0	.19
7.	able to update technical skills as needed	7.0	7.0	6110.0	.07
8.	able to update knowledge of unfamiliary diseases and conditions	7.0	6.0	5798.5	.03
9.	understands physical processes of illness and associated complications	7.0	7.0	6577.0	.40
10.	understands how physical processes and complications of illness relate to client	7.0	7.0	6628.5	.42

variable		majority of visits Hospice:Median (N=51)	majority of visits non-hospice:Median (N=284)	Mann-Whitney U	P value
11.	demonstrates empathy for the elderly	7.0	7.0	6575.5	.37
12.	views client as part of a family and community	7.0	7.0	7056.0	.97
13.	completes paperwork tasks to meet Medicare requirements and deadlines	7.0	7.0	6995.0	.85
14.	completes paperwork tasks to meet agency requirements and deadlines	6.0	6.0	6949.0	.82
15.	deals in realistic and practical ways with situations confronting clients	6.0	6.0	6613.0	.44
16.	does not force own values on client and family	7.0	7.0	6490.0	.30
17.	recognizes and deals with family concerns related to the client's health problems	6.0	6.0	6609.5	.60
18.	during visits gives time to both psychosocial and physical care	6.0	6.0	6930.5	.80
19.	activities are planned and implemented based on treatment goals for the client	6.0	6.0	6748.0	.60
20.	provides clear direction to clients during visits	7.0	7.0	6869.5	.70
21.	encourages client and family independence when necessary	7.0	7.0	6352.5	.20
22.	able to deal with problems in priority order	6.5	7.0	6976.5	.82
23.	delegates non-nurse tasks to support personnel	6.0	6.0	7021.5	.92
24.	able to analyze a situation and develop an appropriate plan	7.0	7.0	6410.0	.23
25.	expert in health assessment skills	7.0	6.0	6369.0	.32
26.	organized in their approach to time and tasks	6.0	6.0	6630.5	.77

variable		majority of visits Hospice:Median (N=51)	majority of visits non-hospice:Median (N=284)	Mann-Whitney U	P value
27.	able to make independent decisions	7.0	7.0	6443.5	.34
28.	able to adjust daily client schedule if unexpected problems occur	7.0	7.0	6663.0	.60
29.	good interpersonal communication skills with client and family	7.0	7.0	6856.5	.88
30.	good working relationship with physicians in the community	7.0	6.0	5843.5	.04
31.	keeps supervisor informed of major changes in clients	6.0	6.0	7020.0	.95
32.	able to be a "marketing person" for the agency	6.0	5.0	6468.5	.32
33.	uses referrals to other agency services when appropriate	6.0	6.0	6230.0	.18
34.	uses community resources for meeting client needs when appropriate	6.0	6.0	6761.5	.62
35.	understands the structure of the agency in which they work	6.0	6.0	6246.0	.18

(missing cases = 2)
(P = 0.05)

APPENDIX B-2

VARIABLE AND FREQUENCY OF MENTION IN 1-5 RANKING OF IMPORTANCE; ALL AGENCY TYPES COMBINED

variable	Percent
1. foundation in formulating nursing diagnoses	4.3
2. foundation in formulating measurable goals for client care	4.3
3. background in principles of teaching/learning for client/family	24.6
4. knowledge of nutrition teaching	0.4
5. understanding of all rules and regulations governing home care	24.1
6. hands on technical skills in their area of practice	42.0
7. able to update technical skills as needed	5.6
8. able to update knowledge of unfamiliar diseases and conditions	1.6
9. understands physical processes of illness and associated complications	13.6
10. understands how physical processes and complications of illness relate to client	10.3
11. demonstrates empathy for the elderly	4.3
12. views client as part of a family and community	6.5
13. completes paperwork tasks to meet Medicare requirements and deadlines	11.0
14. completes paperwork tasks to meet agency requirements and deadlines	5.1
15. deals in realistic and practical ways with situations confronting clients	9.0
16. does not force own values on client and family	3.4
17. recognizes and deals with family concerns related to the client's health problems	2.1
18. during visits gives time to both psychosocial and physical care	5.9
19. activities are planned and implemented based on treatment goals for the client	8.6

variable		Percent
20.	provides clear direction to clients during visits	4.0
21.	encourages client and family independence when necessary	4.0
22.	able to deal with problems in priority order	12.5
23.	delegates non-nurse tasks to support personnel	0.9
24.	able to analyze a situation and develop an appropriate plan	14.9
25.	expert in health assessment skills	43.8
26.	organized in their approach to time and tasks	27.1
27.	able to make independent decisions	28.8
28.	able to adjust daily client schedule if unexpected problems occur	13.5
29.	good interpersonal communication skills with client and family	14.1
30.	good working relationship with physicians in the community	7.3
31.	keeps supervisor informed of major changes in clients	3.7
32.	able to be a "marketing person" for the agency	1.9
33.	uses referrals to other agency services when appropriate	1.5
34.	uses community resources for meeting client needs when appropriate	9.5
35.	understands the structure of the agency in which they work	0.6
36.	nursing process	8.9
37.	update knowledge and skills	2.8
38.	completes Medicare and agency paperwork	31.0
39.	communication w/ clients/MD/staff	28.8
40.	other (noncodable)	44.6
98.	personality characteristics	9.2

(missing data = 1.9%)

APPENDIX B-3

TAU C ASSOCIATIONS (≥ .40) BETWEEN KNOWLEDGE AND ABILITY VARIABLES (P = .0000)

variable		by variable	Tau C
3	-	4	.40
8	-	10	.42
10	-	12	.42
10	-	18	.42
12	-	17	.41
15	-	18	.40
15	-	20	.44
15	-	21	.40
15	-	24	.42
15	-	34	.40
16	-	17	.44
17	-	20	.41
17	-	24	.41
19	-	21	.44
19	-	24	.41
21	-	22	.41
21	-	24	.41
21	-	34	.42
26	-	27	.40
28	-	34	.40
30	-	31	.44
31	-	33	.41
31	-	34	.41
32	-	33	.41
33	-	35	.44
8	-	9	.46
11	-	12	.45
12	-	18	.45
17	-	19	.48
17	-	21	.46

variable	by	variable	Tau C
17	-	34	.45
18	-	20	.45
20	-	21	.48
22	-	24	.49
27	-	28	.45
34	-	35	.47
1	-	2	.58
7	-	8	.58
9	-	10	.62
13	-	14	.65
15	-	17	.54
17	-	18	.57
18	-	19	.50
19	-	20	.53
33	-	34	.68

AUTOBIOGRAPHICAL STATEMENT

Lazelle Diane Emminizer Benefield was born June 17, 1951 in Miami, Florida. She received a diploma in nursing from The Johns Hopkins Hospital School of Nursing in 1972, a baccalaureate degree in nursing from the University of Florida in 1976, and a master's degree in nursing from the University of Alabama in Birmingham in 1978.

She is currently a member of the American Nurses Association, National League for Nursing, National Association for Home Care, American Public Health Association, Oncology Nursing Society, American Society for Public Administration, and Sigma Theta Tau. Publications include Home Health Care Management (1988, Brady, Prentice Hall), Motivating Professional Staff (1988, Nursing Administration Quarterly 12(4): 57-62), Staff Productivity (1988, in M. Harris (ed) Home Health Care Administration, Rynd Communications), and Trends and Needs in Home Health Care (1985, in M. Hogstel (ed) Home Nursing Care of the Elderly, Brady Co.).

Ms. Benefield is an assistant professor of nursing at Old Dominion University, and a former director of a home health care agency. She has held clinical positions in public health and acute care facilities, and faculty appointments at the University of North Florida in Jacksonville, and Texas Christian University in Fort Worth.